

Precision SHOOTING

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TEAM REPRESENTATIVES DISPLAY WEAPONS USED IN THE
1960 PAN-AMERICAN MILITARY RIFLE MATCHES

Back row, left to right; Sgt. Julio Billiard, Chile, 1912 Austrian Mauser; Lt. Col. Luis Albornoz, Peru, 1909 German Mauser; Capt. Hector danabria P., rechambered Mauser and Cpl. 2c Nicolas Arevalo, Belgian Fabrique National. Kneeling; 1st Lt. Antonio Palacios, El Salvador, 1909 Spanish Mauser and Sgt. Bolivar Ojeda, Ecuador, 7.92 m/m Czechoslovakian Mauser.

a magazine for Shooters by Shooters

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Editor—P. H. Teachout

President—Crawford H. Hollidge

Vice-President—Robt. Stinehour

Treasurer—P. H. Teachout

Clerk—Frederick G. Mehlman

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SPORT SHOOTING IS GROWING

Contrary to the cryings of some few calamity-howlers among the competitive target shooters, the evidence seems to be that participating interest in sport shooting with all types of weapons is growing, and rapidly.

One supporting evidence is the number of new manufacturers of arms, shooting accessories, and handloading equipment. That certainly indicates an expanding, growing market to absorb their competitive products. And an expanding market for sport shooting products can only mean that more people are doing more shooting.

A recent entry in the firearms manufacturing field is the Canadian firm, the North American Arms Corporation Ltd., which is now producing two models of a bolt action sporting rifle in .308 caliber, a single shot .22 rim-fire rifle and both a single shot and a pump action repeating shotgun. To the best of our knowledge, this is the first time that a center-fire sporter rifle has been commercially manufactured in Canada since the Ross sporting rifles were discontinued, many years ago.

While by no means new in the firearms manufacturing field, or even in the manufacturing of rifles and shotguns, the High Standard Manufacturing Corporation will now market under its own name a line of shoulder weapons. First to be produced are two models of auto-loading .22 rim-fire rifles and both pump action and auto-loading shotguns. Plans are to add other models of shoulder arms during 1961.

The "old-line" arms companies are bringing out new items to hold their places in the marketplace. Winchester has just announced an adaptation of their well known Model 61 pump action .22 rimfire rifle to handle the .22 Winchester Magnum Rim Fire cartridge, as the Model 61 Magnum rifle.

The great majority of the new lines of weapons are of the sporter hunting type, which is where the demand lies to make mass production profitable. But that there is such a demand is clear evidence of the increasing interest in sport shooting.

An even clearer evidence of growing participant interest in sport shooting is the growth of hand loading of ammunition, especially the fairly recent surge in shot-shell reloading. This indicates that there is not only a growing number of shooters, but that more shooters are taking advantage of an economical means for doing more shooting. Since hunting simply can not account for this increase in use of ammunition (and arms) it simply must be that a great many more people

are doing some form of target shooting, as a sport and recreation in itself, and as the only practical means of satisfying the urge to shoot.

If the established programs for target shooting are not gaining from this sport shooting it would seem that the growth and expansion of interest in shooting organizations may be "missing the boat" by not providing and promoting target shooting programs that will be attractive to this available and growing mass of sporting weapon shooters. From this writer's long association with rifle and pistol shooting organizations it is his opinion that most of these organizations are woefully short on promotion and selling talent.

Perhaps the next step in sport shooting will be privately owned target ranges, with conveniences, management and shooting programs to fit the desires of a mass of shooters, backed up with promotion and sales effort to bring a volume of use which will provide a profit to the owners. Times are changing and perhaps some of us old-timers will be left sitting on the porch watching the traffic go by.

PHT

PAN-AMERICAN MILITARY RIFLE MATCH

On April 4-8, 1960, the United States Army Caribbean sponsored a history-making event in the field of military marksmanship, when this command held the first Pan-American Invitational Military Rifle Match. Eighteen Latin American countries were invited with 14 countries accepting the invitation of Major General Charles L. Dasher, commanding general, USARCARIB.

This largest of all international rifle matches was attended by Bolivia, Brazil, Chile, Colombia, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, Panama, Peru, Uruguay, United States and Venezuela.

An interesting program was assured since the match was open to military personnel of the various countries firing only allowable weapons which were standard

unmodified military rifles of the various countries. By the time the match started, a total of eight different models of military rifles were on hand.

The Venezuela team brought the 7mm Fabrique Nacional D'Arms of Herstal, Belgium, Model 1947. Neighboring Colombia fired a Model 1930 Mauser which had been rechambered from 7.65mm to fire a caliber .30 U. S. cartridge and Ecuador's team competed with a 7.92 Czechoslovakian Mauser made in Brno in 1924. A German-made 7mm Mauser, Model 1912 was fired by the representatives from Chile and El Salvador used a 7mm Spanish Mauser, Model 1909, made in Oviedo, Spain.

With the 7.65mm Mauser Original, Model 1909 from Germany, the Peruvian aggregation came in third in the final team match. Nicaragua brought a 7mm Mauser, a 1917 U. S. Enfield and the rest of its team used U. S. M-1 rifles. All other teams fired the U. S. M-1 rifle.

The match was held at the Empire Rifle Range, located on the Pacific side of the Canal Zone. Eighty-nine competitors, six of whom were members of the USARCARIB rifle team representing the United States, participated.

The match program consisted of two days of practice firing, this being necessary to permit the Latin competitors to become acclimated to the Isthmus plus allowing them to familiarize themselves with the American National Match Course—obtaining zeroes, pacing of rapid fire strings, etc.

A clinic in the American techniques of fire was offered by the U. S. Army Marksmanship Unit of Fort Benning, Ga. with the early conclusion of matches on April 6 and 8. These invaluable lessons, given in English and Spanish, were followed by a demonstration of the Infantry Trophy Match Course. The unit is under the command of Lieutenant Colonel Thomas J. Sharpe.

Match firing officially opened on April 6. This competition consisted of four stages of fire (2-200, 300 and 600 yards) which comprised an individual



The Haitian team was beaten only by the U. S. team in the 1960 Pan-American Military Rifle Match and were heavy individual award winners. Maj. Gen. Charles L. Dasher, in center, made the awards.

American National Match Course. The fifth stage was an aggregate score of the first four matches with the Commanding General's Trophy going to the winner.

The aggregate match was won by Private First Class Joe A. Dreiling, Headquarters and Headquarters Company, 1st Battle Group, 20th Infantry, Fort Kobbe with a score of 236 points and 18 V's out of a possible 250. He was closely challenged by Specialist Four Robert Albert from Combat Support Company, 1st Battle Group, with a score of 234 points and 18 V's and Specialist Four Fred King of D Company, 1st Battle Group with 234 points and 15 V's.

However, this was not indicative that the USARCARIB team made a clean sweep. Colombia and Haiti scored twice and Peru and Chile placed in the individual tallies. In the 200 yard slow fire match, Lieutenant Anibal Gomez R. and First Sergeant Servando Espinel, of Colombia, placed first and third with scores of 48V1 and 47V4 out of a possible 50. First Sergeant Ramon Antonio Vidal, of Chile, took second place honors in this match with a score of 47V5.

Match two—a rapid fire exercise from the 200-yard line—saw the three top men fire perfect scores. Specialist Four Alfred Affleje of the USARCARIB team, fired 50V5 which was tied by Second Lieutenant Guy Marcel from Haiti. Sergeant Harvey Woods of the USARCARIB team scored 4 V's to come in third. The ensuing shootoff resulted in Affleje copping first prize.

Specialist Four Robert Albert, USARCARIB, and Lieutenant Colonel Luiz Albornoz, Peru, fired perfect scores during the rapid fire match from the 300 yard line. Three more V's for Specialist Albert made the difference as he picked up a total of five V's to Colonel Albornoz's two.

Specialist Four Fred King scored 49V4 to show.

Captain Monod Philippe of Haiti captured first place in the slow fire match from the 600 yard line by tallying 95V10 out of a possible 100. Dreiling, with 94V7, was second and King was third with 93V6.

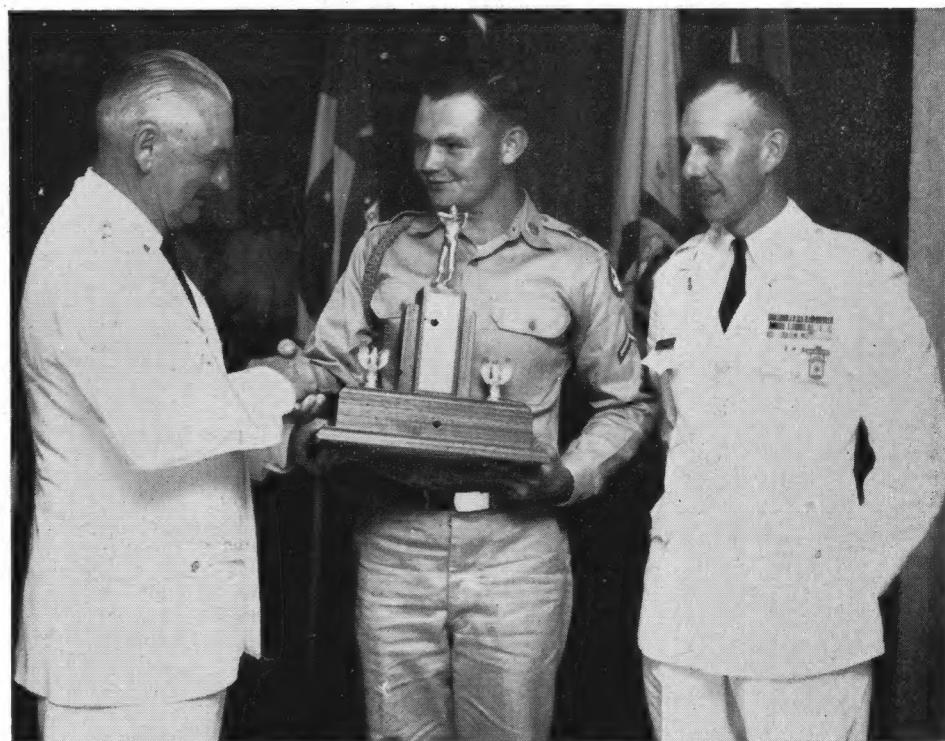
Note that Dreiling won the general's trophy although placing only once during the match. This is best explained by his consistency of performance, i.e., placing fourth or fifth in every exercise.

The second day's firing consisted of two six-man team matches—a slow fire match (20 rounds offhand at 200 yards and 20 rounds prone at 600 yards) and a rapid fire match (20 rounds at 200 yards standing to sitting and 20 rounds at 300 yards standing to prone).

The slowfire team match was won by the United States with 1164 points and 104 V's out of a possible 1200. Haiti challenged them for this honor with 1123V52 and Colombia was third with 1071V52. The United States, Haiti and Colombia also emerged as the top three teams in the rapid fire event. Their scores were: United States, 1098V55 to Haiti's 1055V50 and Colombia's 1045V53.

Haiti's fine showing can be attributed in part to the efforts of team coaches Marine Chief Warrant Officer Perry Davis and Sergeant Charles Bushey of the U. S. Naval Mission to Haiti. Before January, 1960 the team had never practiced with the M-1, let alone competed!

The concluding match was the firing of the American National Match Course on April 8. This four-man team exercise was a hotly contested event with the



Private First Class Joe Dreiling of Company D, 1st Battle Group, 20th Infantry, center, receives the Commanding General's Trophy from Maj. Charles L. Dasher, commanding general, U. S. Army Caribbean, for firing the top individual score of 236 in the 1960 Pan-American Invitational Military Rifle Match. Match executive officer, Maj. David B. Parsons, watches from the right.

United States overcoming an early deficit to come out on top with a score of 945V82 out of a possible 1000. Haiti scored 932V68 and Peru was third with 902V46.

Although users of the bolt action rifles were allowed 10 seconds longer than users of the semi-automatics during rapid fire strings (as per National Rifle Association rules) it was found that even with this increased time allowance, the straight bolt handle of various models of Mausers proved to be a somewhat delaying factor. This necessitated breaking of position for reloading each round due to the hand having to be raised several inches higher and having to ride over the comb of the stock during bolt operation. A curved-down bolt handle such as found on U. S. rifles would have proved a great benefit. Should the Latin rifle teams stress rapid fire techniques in preparation for another match of this enormity, they will be hard to beat.

A number of individuals played a role in making this match a success, but without the efforts of Major David B. Parsons, executive officer; Captain Lawrence D. Shields, chief line officer; Captain Angel L. Torres, assistant executive officer; Captain Alistair D. Munro, range officer; Captain William F. Pollard, a statistical liaison officer and Master Sergeant Simon W. Woegens, match NCO, the match would not have achieved the acclaim which resulted.

All officers except Captain Munro are instructors at the U. S. Army Caribbean School at Fort Gulick, C. Z. Captain Munro is commanding officer of Company D, 1st Battle Group, 20th Infantry.

fantry, whose troops supported the range. Sergeant Woegens is an instructor in the Ordnance Section, USARCARIB School.

Major Parsons, Distinguished Marksman and life member of the NRA, conceived and directed the event.

General Dasher summed up the results of the match on April 8 at the awards ceremony at the Quarry Heights Officers' Club. He observed that the rifle match "has revealed the true deep bonds of friendship we feel for each other and should portray to all, that 'hemispheric solidarity' is more than an expression—it is a living organism with a concept of 'all for one and one for all'."

THE TOURNAMENT CIRCUIT IDAHO JUNIOR CHAMPIONSHIPS

Bill Johnson, Buhl, and Jo Ann Sanborn, Twin Falls, walked off with the aggregate championships in the annual Idaho State Junior Gallery Rifle Tournament held April 3 at the Twin Falls Rifle and Pistol Club rifle range. Johnson took the boy's title with a total of 555 points of a possible 600 (20 shots in each prone, kneeling and standing positions) while Filer's Klark Remington came in second with 552. Miss Sanborn amassed 526 points in copping her title with a comfortable 10 point edge over Jeanie Hansen, Ogden, Utah, who came in second. Some 46 boys and girls under 19 years of age took part in the event.

The St. Maries, Idaho team in traveling the greatest distance to the match had the misfortune of an automobile breakdown a scant 100 miles out of St. Maries. After some frantic telephone (Continued on Page Four)

MAINE SMALL BORE RIFLE TOURNAMENT

NRA Registered State Championship

AT DAMARISCOTTA, MAINE

AWARDS FOR ALL CLASSES IN ALL MATCHES

Programs: Col. Samuel Yeaton, Civil Defense, State House, Augusta, Maine



Idaho Junior Rifle Champions and runners-up. Left to right; Bill Johnson, Jo Ann Sanborn, Jeanie Hansen and Klark Remington.

The Tournament Circuit

(Continued from Page Three)

conversations, their assistant instructor picked the team up with a private plane and the team was able to compete in the tournament.

One of the top individual performances was turned in by Robert Wolfe of Buhl, Idaho, in the standing match. Wolfe suffered a broken arm several weeks prior to the match and competed just three days after his cast was removed. His 174 gave him second place in the standing match.

Klark Remington won the standing match with a 178. Bill Johnson won the kneeling match with a 190.

Champion Bill Johnson used a Remington model 37 with Redfield Olympic sights. Klark Remington used a Remington 37 with Vaver rear and Lyman front sights. Jo Ann Sanborn used a Remington 37 with a Kenyon bedder, a Kenyon trigger and a Douglas barrel, a Freeland front sight with a special Kenyon insert and Redfield Olympic rear sight. Jeanie Hansen shot a Winchester 52. Mark III ammunition was the favorite with most of the shooters.

FRESNO, CALIFORNIA, .30 CALIBER

John Weldon, Clovis, won the aggregate for the May .30 cal. match of the Valley Shooting League with a score of 247-27V. Clarence Kozlowski, Coalinga, was runner-up with 245-27V. Leonard Butler and Henry Wright of Fresno were third and fourth with scores of 244-23V and 244-19V, and John Ashcraft, Ft. Ord, was fifth with 238-20V. Kozlowski and Ashcraft shoot in Expert class.

Butler and Weldon both had 49-4V scores at 200 yds. standing. John Kennett, Fresno, was high at sitting rapid fire with 50-7V, Weldon's 49-6V was high at prone rapid fire, and Henry Wright's 50-6V was high at 300 yards slow fire sitting. Bob Perkins, Fresno, won the 500 yd. prone match with 50-9V by outranking Bob Lepper with another 49-9V score.

Thirty-two competitors participated in the match.

A "PALMA MATCH" TEAM COMPETITION

Teams of eight shooters with five high to count for team score fired the Palma Match course of fire of 15 shots at 150 yards, 15 shots at 175 yards, and 15 shots at 200 yards, on the C5 target (1000 yard target reduced for 200 yards), with .22 caliber rim-fire rifles, any sights, prone position, at the Modesto Rifle Club range (California) on May 22, 1960.

The Fresno Rifle Club team of Joe Specht (possible 225 with 32 V's), Henry Wright (223-32V), Bob Perkins (222-31V), Bill Reetz (221-29V) and John Shirinian (219-33V) won the match with a team score of 1110-157V of a possible 1125 points.

In second place was the Modesto Rifle Club team of Nolan Casey (224-30V), Merle Wheeler (223-30V), Duane Jenner (222-27V), Wallace Barnhill (220-32V) and Charles Costley (220-24V) for a team score of 1109-143V.

Down a bit in third place was the Lodi Rifle Club team of Joe Luce (220-28V), Stanley Kennedy (220-28V), Monroe Ober (216-25V), Bill Luce (216-24V) and Lester Hibbs (215-23V) for a team score of 1087-128V.

(Editors' comment: This is the first report of a smallbore Palma Match course competition I've seen or heard of in too many years. If any younger shooter gets the idea that a high V-count possible on that approximately 7 inch 5-count bull, at those ranges on an average shooting day, is any cinch, they should give it a try.)

A JUNIOR RIFLE TOURNAMENT

The Junior NRA Registered Outdoor Position Regional Smallbore Tournament was fired on Forbes Rifle and Pistol Club's range at Karner, Albany County, New York, on Sunday, May 29, 1960. The shoot, which was limited to New York State residents, consisted in ten shot individual matches in each of the

four standard positions, an aggregate, and a four man team match of ten shots each in the prone and offhand positions. All matches were fired at 50 yards with iron sights.

The day was sunny with moderate temperature and humidity, but a wind of variable intensity swinging between 7 and 9 o'clock gave all competitors trouble in all positions.

Twenty-four individuals and five teams competed. Two competitors were girls, two were sub-juniors and all but three were unclassified. With a couple of exceptions, rifles were 52's, 75's or 513-T's, the last being predominant. Only one team was school-sponsored.

Winning and outstanding scores were: Prone match, winner Thomas J. Aalto, Schenectady, 100-6x. Standing, winner Richard F. Sindler, Poughkeepsie; 84; second, Patti Ann Robertson, Schenectady, 83. Sitting, winner John Symanski, Schenectady, 94; second Aalto, 93. Kneeling, winner, Aalto, 90; second, Symanski, 88. Aggregate winner, Aalto, 361-9x; second Symanski, 360-9x.

Four man team winner, American Legion Junior Rifle Club from Rotterdam Junction—Aalto 181-3, Symanski 177-1, Robertson 163-2x, and Robert Cary 160-0x, team total 681-6x. Second place team was the Canajoharie Targeters with 648-5x.

Comment: 1) It seems apparent that the NRA's policy of persistently scheduling Junior Regional Tournaments in competition with students' final examinations is entirely unrealistic.

2) The fact that juniors in junior tournaments are charged about twice as much per shot as seniors in open smallbore tournaments and are not deterred indicates that senior entry fees are too low.

3) The enthusiasm with which this 60 shot tournament was received by the competitors able to attend indicates that 220 shot one day "marathon" tournaments and 40 shot matches are not necessary and may be a deterrent to the entry of new shooters into the smallbore game.

4) There is a possibility that competitive shooting may be getting "classification happy."

5) Coaching of sub-juniors in all matches could be permitted without raising difficulties.

6) The absence of complaints, protests, beefs, dissension, sore-heads, disorder, long pauses and boisterousness indicates that at least that segment of the present crop of kids that goes in for rifle shooting is **ALL RIGHT**, and so are the men who coach them.

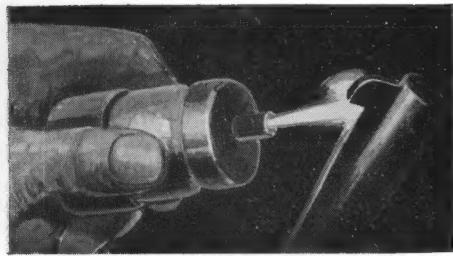
Dermot C. Reilly

A MUCH NEEDED GADGET

by William E. Peterson

Years ago, too many for most of today's shooters to remember, you would see a competitor on the pistol firing line get out a little piece of camphor, place it in a small can cover, and light it. Then he would hold his gun over the tiny flame to blacken his sights. This worked all right if the wind wasn't blowing. Others came up with bits of candle applied the same way. These devices at least took the shine off the sights although they did not give an absolute black.

Then some genius discovered that a carbide flame would give a beautiful dead black. They used to use those lamps on bicycles, and perhaps some shooter tried his bicycle lamp on his sights. But the bicycle lamp was bulky, so it was not long before miner's lamps began to make their appearance on pistol and even rifle firing lines, also becoming quite common



The Rivers Sight Blacker

in dealers stocks, as they are today. These are really very efficient contrivances, and make a good camp light. This writer has used his to blacken his sights during a day's shooting, then clamped it to an upright stick for reading in bed while camped near the range.

However, we shooters do not crave continuous illumination, but merely a jet of carbide gas flame lasting only a minute or so. Thus the new Rivers Sight Blacker, which does just that while occupying space less than one-fourth that of the miner's lamp, seems destined to become as familiar a part of the shooting kit as the pet screw-driver. It fills a long-felt want.

The Rivers Sight Blacker is less than 3 inches high and $1\frac{1}{2}$ inches in diameter. An inch of carbide crystals will serve for a good many days of shooting before needing renewal. Operation is the same as the miner's lamp—unscrew the top, apply a drop or two of moisture (most shooters use saliva) replace the cover and light the jet of gas which immediately comes from the nozzle. The narrow jet of flame shoots out for two or three inches, and lasts about two minutes, depending upon the amount of moisture used. The pressure is enough to permit of the flame being directed horizontally, to deposit a film of the most intense black, so thin that it does not perceptibly affect the width of sight or sight aperture. The sights appear so black that even at 25 yards they are blacker than the bull of the target, permitting of center holding for those who prefer it.

The Rivers Sight Blacker sells for \$1.75, through dealers or direct from the maker, Joseph Rivers, 4 Pine Point, Rowayton, Connecticut. As it is against postal regulations to send carbide through the mail, it must be purchased separately. It is inexpensive, and is stocked by most dealers serving shooters.

LETTERS

LIGHTWEIGHT RIFLES

Dear Sir:

In reading Precision Shooting I see that Colonel Townsend Whelen and Precision Shooting are both asking for the experiences of readers on the light weight rifles.

We are lucky here in having a good rifle range to 300 yards along side the Rod and Gun Club grounds, and a nice building to shoot from in all kinds of weather.

There has been quite a lot of bench rest shooting since world war II with the .222 Rem. and the .243 Win. among others.

The first Rem. 722 in .222 cal. we tried out here had a light 26 inch barrel. The next one tried had a bad chamber and after being repaired at the factory came with a medium weight 26 inch barrel. The last two purchased here had medium weight 24 inch barrels.

They all shoot groups of less than an inch at 100 yards for five shot groups. The first one tried with the light 26 inch barrel is as accurate as any of the lot, and has been shot a lot more than any of the others. The .222 Rem. will shoot 5 shot groups without the group opening up from a warm barrel. The only place where the .222 Rem. loses out is in a hard wind. They will shoot smaller groups than the 6 m/m when there isn't much wind.

In the last year there has been quite a few .243 Win. 70 light weights and H. V. A. light weights shot here and they are always an accurate cartridge, and will buck wind nicely when it is blowing hard.

Every one of the light rifles I have seen here shoot better after the action is glass bedded and the barrel free floated. Then they will shoot consistently, otherwise the stocks sooner or later will move and spoil groups.

The light weight 6 m/m's here are only good for 3 shot groups before the barrel heats up enough to cause flyers. The first thing done to all rifles here usually is to glass bed the actions and free float the barrel, and that seems to cure our troubles before they begin.

My own pet varmint gun happens to be a 722 Rem. in .244 cal., as I like the cartridge from the handloader's point of view. I have always thought the reason the cartridge isn't as popular as the .243 Win. is that Rem. only built it in the heavy 8 lb. rifle and after installing a scope the gun really **weighs**, so most of the hunters buy the light weight model 70 and H. V. A.

They are both excellent deer rifles and are good killers up to the limits of their range. Over that range they no doubt would be shy on energy, and could cause the hunters to chase crippled deer around the mountains.

One of the most popular hunting rifles here the last couple of years is the .25-06 Improved. There are several of them here, chambered by Lathrop of Seattle, and made from model 70's in .257 Rem. cal. I will have a .25-06 Ackley to try out for group, as soon as it is throated for the long bullets.

The .25-06 in open desert country will reach way out there, and when a deer gets hit he knows he's hit. Also the .25-06 will give the 6 m/m's a bad time on the bench rest for tight groups, and recoil not at all bad.

Another popular cartridge slowly dying is the .257, for the main reason that it was never loaded up to where it should have been. I have read several good articles on the .257 lately, and agree with all of them that the cartridge should not be allowed to die out.

The .257 and .25-06 both are good for 3 shot groups only, for the groups open up as the barrel warms up. Enough to spoil a bench rest group, but for hunting it shouldn't make enough difference to be noticed.

It looks like the light weight rifles and the 6 m/m cartridges are here to stay as they are getting more popular all the time, and properly tuned up are about as accurate as anything we have ever used, and easier to carry all day on a hunting trip.

It seems to me that the most important thing is that the man behind the gun still has to do his part. Which makes me wonder if we will ever be any better than we are at present, with all the excellent handloading components we have to pick from today. All of which makes me believe that we haven't yet

come up with anything outstanding or new to make things any better than we now have at our disposal.

It seems like the light weight rifles will shoot as good as any we have ever used.

Maurice Wood
Oakridge, Oregon

.222 MAGNUM LOADS

As there hasn't been much in print about loads for the .222 Magnum, here are some loads I have tried out and find them all about the same for accuracy and they all land near the same place on the paper.

All loads with C. C. I. primers and 53 grain OP Sierra bullets: 28 grs. 4320; 26 grs. 4895; 23 grs. 4198; and 25 grs. 3031; all in Remington cases and fired in a 13 pound Varminter with Douglas barrel.

They average about .625". That is about as good as the "Ol Man" can expect—(past 70).

E. P. Hinkle
St. Helena, Calif.

VINDICATES HARVEY DONALDSON

Friend Teachout:

Have read with interest the letter from Harvey Donaldson in the May issue of P. S. While Harvey does hold a Cittation, as an Honorary Citizen of the Great State of Texas, duly signed by Governor Shivers, thus giving him ample license as a teller of Tall Tales, the facts as stated in his letter are true.

You see I was with him on this ride, and the drifts on both sides of the road for the entire distance were EXACTLY as stated. There was so much snow in this particular section of Herkimer County that I was looking for a polar bear to appear around any turn in the road. When Harvey tells you something you can rest assured it is so.

I also happen to be the fellow that fired the shot that wrecked the old Colt shown on the cover of your May issue. Since that time I have learned from Harvey that I destroyed one of the RARE Colt conversions.

Very truly yours,
Anthony Studenic
Johnstown, N. Y.

SOME RIFLE EXPERIENCES

Dear Phil:

Some questions have been asked; have I ever tried the 7 mm in a 12 inch twist? And what were my experiences with reborbed barrels. There were also some insinuations some of my light hunting rifle, minute of angle groups didn't exist or maybe they were three or five shot instead of a proven ten shot or more group.

On the 7 mm I have tried the 7x57 in 8 $\frac{3}{4}$, nine and ten inch twist. The improved 7-06 (which later turned out to be the 280 Rem.) in eleven and twelve inch twists. I also fired the 7 mm Weatherby Magnum in twelve twist.

With these I experimented with everything from Norma 110 gr. to Hornady 175 gr. I even had an exceptional fine Apex .284 barrel made and chambered for the above 7-06. This was target weight in twelve inch twist. I wanted this for 1000 yard Wimbledon type shooting and planned to use the very pretty Norma 156 gr. match bullet as I had previously had excellent experience with the Norma's 139 Match in 6.5. This barrel would not handle anything heavier than

(Continued on Page Eighteen)

BULLET FIT AND THE BERNOULLI THEOREM

By Jesse M. Grigg

NOT only the accuracy of the rifle, but also the life of the barrel depends on the relation between the original diameter of the bullet and that of the bore. This is true for both lead bullets and for jacketed ones. If the bullet is too big the pressure may be excessive, which result, besides involving danger, may permanently enlarge the chamber or bore. If the bullet is too small, gas blows by, this causing uneven muzzle velocity, and serious damage to the chamber and bore account of erosion.

Obviously, lead bullets may seal the bore against blowby more easily than jacketed ones. But even with lead bullets the sealing is not as surely accomplished with smokeless as it was with black powder. The upset shock of smokeless depends much on initial events. If the primer is weak, or the firing pin defective, the charge may slowfire or even hangfire, permitting the bullet to enter the rifling undersize, with result not only of blowby at the places of bore enlargement, but also further enlargement at these places.

In order to account for some aspects of interior ballistics, a simple equation which belongs to the theory of fluid mechanics is employed herein. Though more simple in form than the general equation for the thermodynamics of firearms, it differs from the latter equation only by ignoring heat loss or gain, and by taking no account of the continued addition of energy to the system as powder in the bore continues to burn. Thus its simple form relates only what might occur without temperature change at some particular place in the bore in some particular short interval of time.

This abbreviated form is simply the Bernoulli Theorem

$$P + \frac{1}{2} \rho V^2 = \text{a constant}$$

The first term equals the pressure energy (simply pressure itself) in a unit volume of the gas. The second term, being the familiar product of one-half the mass and the velocity-squared, equals the kinetic energy in the same unit volume of the gas. That the sum of these two energies equals a constant quantity is a fact of far reaching importance in what takes place in the bore. It means that if the velocity of the gas falls the pressure rises. Also, as the reverse is true, if the gas velocity rises, the gas pressure falls. If the gas velocity were great enough there would be no pressure at all, but the bullet also might be moving at the same high velocity.

For a classic example of the working of this principle, let it be supposed that a bullet or other matter having inertia is lodged in the bore. When the next bullet comes along, this second bullet and the gas behind it move in the normal manner until suddenly the motion of the bullet is arrested by the obstruction. As the obstruction stops the motion of the bullet, the motion of the gas next to its base likewise is arrested, as also is arrested the motion of succeeding gas molecules, fast as they arrive. As the total energy remains constant, all the kinetic energy instantly becomes pressure energy of tremendous force, concentrated at the place of arrest, which is the bullet base; and almost inevitably, as the barrel metal needs to be stretched only slightly more than one-thousandth part of itself to acquire a permanent set, the barrel is ringed.

Here is another illustration, of which examples are legion. When a .22 LR cartridge is fired, internal pressure stretches the case, but unless the brass is very soft, the stretching does not completely seal the chamber. Inside the case mouth the gases are rushing forward at speed; outside, what gas leaks back along the imperfectly sealed case has very little velocity. Result, outside pressure exceeds the inner, and almost invariably, though the chamber be much oversize, the empty case is ejected measuring for a third of its length, from one to two thousandths smaller than it was originally.

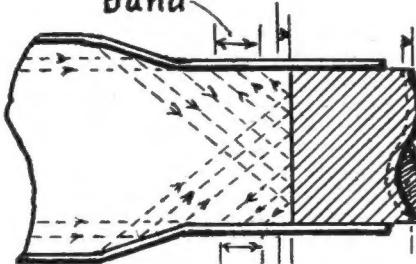
An exception is the case of very soft brass. In this event internal pressure seals the chamber, with the brass plastered so tightly to the wall that heat is carried away almost as fast as it arrives. The stretched case, cooled under internal pressure, remains plastered so tightly to the chamber wall, that the bolt handle may be lifted with difficulty.

A similar result occurs in event of an overload of smokeless powder in a center fire rifle. Whether or not the brass is soft, the chamber is sealed by overload, and intimate contact between the brass and chamber wall tends to keep the brass cool. The chamber itself is stretched under overload; and as steel is more elastic than brass, contraction causes the wall to grip the case so tightly that the bolt handle may be lifted only with great difficulty, if at all.

In opinion of this author the Bernoulli principle also plays an important part in the peening of rifle chambers, though a required particular shape of powder grains also has a role. Shape of the grain is a controlling condition because peening is the result of a momentary accumulation of burning powder grains at a critical place on the wall of the combustion chamber. The grains would not accumulate there if their motion did not trend in that direction, and it would not trend in any one direction unless the shape favored free and uniform reflection. The shape best suited to rebound is the spherical, and it is also best suited to uniformity of pattern in reflection. Spherical is the shape of the grain in the ball powder which has been used when peening has occurred.

Concentration

Band



30°06 Concentration of Powder Grains

The first stage in the phenomenon is the detonation of the primer, which violently blows the powder grains in the partly filled case toward the forward end, just as a strong wind might do. If the case is bottle-necked and the bullet base is flat, two reflections or rebounds of the grains—the first from the sloped shoulder of the bottle-neck, the second from momentarily lodge a preponderance of both at twice the angles of incidence—

the flat bullet base, and the directions of grains at the circumference of the combustion space. In the cylindrical case of the .22 rimfire load, momentary lodgement of the grains on the circumference of the combustion chamber is accomplished by reflection from the concave base of the .22 bullet.

Meanwhile in either case the primer heat has ignited the grains. The bullet is still at rest, or is just beginning to move. The initial energy of combustion is all heat and pressure energy. Concentrated at the very wall of the combustion chamber, this energy, because it exists as pressure to exclusion of kinetic energy, exerts on the wall a force of peening strength. The damage is done solely because burning grains are concentrated at the places where peening has been found to occur. The Bernoulli Theorem is involved to extent that the energy exists as pressure to exclusion of kinetic energy.

This theory of charge concentration fits in nicely with the four other conditions which, according to RIFLEMAN report, October, 1957, must be present when damage to the .30°06 chamber occurs. These four conditions are: a violent primer, a flat base bullet, a case partly filled with ball powder, and fired with the charge at the primer end. If concentration of the grains at the place of damage is a fifth condition, as the above theory suggests, and concentration is brought about by a definite trend in the pattern of reflection, then the remedy is obvious. It is any measure which will destroy the unfavorable pattern of reflection. A concave bullet base for the bottle-neck, and a flat base bullet for the cylindrical case, are suggested design changes that should greatly diminish the damage.

The Bernoulli Theorem accounts also for what, at the time, were baffling phenomena observed by Dr. Mann in his "short barrel" experiments. In these it was discovered that a lead bullet ahead of a heavy black powder charge was considerably upset after it left the muzzle of a "short barrel." His short barrel was one having a length between 10 inches and bullet length itself.

From such barrels unburned powder is thrown out when the black powder charge is excessive, as only a certain amount of black powder may be burned in a given bore. Nevertheless, whatever the powder, the gas velocity in the muzzle blast rises because the pressure falls as the bore is opened to atmosphere. The velocity of the bullet is increased slightly with increase of velocity in the gas, while that of the lighter powder grains is increased so much more that they overtake and collide with the bullet base and cause upsetteage, which is due to both momentum and combustion on the surface of the base. Incidentally, this accounting explains also why bullet velocity increases slightly after bullet emergence. In this instance it is change of pressure energy into kinetic which causes the effect.

Another effect is which the Bernoulli Theorem figures largely in gas cutting. This occurs when the bore is imperfectly sealed, as for example it is not if the bearing cylinder of the bullet is smaller than the bore. In this event the outer end of the escape passage is open to atmosphere. Thus, all the energy of the escape gas tends toward the kinetic; in the narrow passageway, the gas velocity is terrific, and the molecules have in them momentum enough to scour the bore surface only less in degree than a sand blast would do.

Gas cutting may occur either in the chamber throat or in the bore itself, but in general its occurrence in the throat is limited to center fire rifles in which the passage is not sealed until upsetpage has occurred. After the bullet has entered the bore gas cutting will occur only if blowby exists. Whether blowby occurs depends on the location of the tightest place in the bore, as this determines what the bullet diameter will be from thereon to the muzzle. If the tightest place is at the breech the bullet will be undersize all the way.

Though a new barrel have a uniform diameter, this ideal condition does not last with use. The author pointed out a year ago, that in .22 rimfire bores, a section a few inches long just ahead of the breech becomes the tightest place in the bore. Lead plating is the cause. Also in April, 1959, PRECISION SHOOTING, Ernest Stuhlschuter reported that Clyde Hart, in a recheck of barrels, found conditions that parallel those which exist in .22 rimfire barrels after use. All the barrels excepting one showed definite constriction in the first six inches beyond the chamber; and, just as in .22 rimfire barrels, another constriction of lesser degree at the muzzle. The exception was a barrel on which its owner had not spared the cleaning rod.

If the state of uneven diameter is allowed to occur and remain, there is no doubt that the life of a high pressure, high velocity barrel will be short. The loose places become looser, and the tight, tighter, and when actual blowby at length occurs, the end is near. Even with the low pressure of the .22 rimfire, gas cutting occurs if there is blowby, as this author discovered after a year of occasional use of a ringed barrel in this caliber.

Perhaps the secret of a long barrel life is keeping the bore diameter constant, or at least uniform. Plated bullet metal is the first cause of irregularity, and if the plating is allowed to remain, other causes work to augment the fault. Jacket metal fouling is more easily dissolved than is lead; but perhaps infrequent lapping with a lead cast, in addition to regular use of solvent, would help to prolong the barrel life.

The barrel of a high velocity rifle in rapid fire erodes at a rate much faster than one in slow fire. Melted metal being carried away from the bore surface is one reason that has been assigned, but it is doubtful that this is the exact explanation. Ferrous metal in a hot flame is scaled long before the melting point is reached; so perhaps scaling and the carrying away of the formation by subsequent bullets is a closer explanation. Even so, it is doubtful that a few hundred degrees of temperature added to that attained in slowfire will greatly increase this effect. But it certainly will increase both the pressure and the bore diameter, perhaps with the result of blowby as a cause for rapid erosion.

In the choice of original bullet diameter there are three fundamental characteristics which must be taken to account in figuring the upsetpage; these are the bullet inertia, the allowable chamber pressure, and the hardness of the bullet metal. Short, light, jacketed bullets for use with low pressure generally exceed groove diameter. Long and heavy bullets for use with high pressure are generally smaller than groove diameter, as the combination of high pressure and much weight insures sufficient upsetpage without causing the dangerous pressure which would result with an oversize bullet. The diameter of the bullet in the .250 Savage

load, for example, just equals groove diameter.

The .22 LR bullet measures from .001" to .002" more than groove diameter, the higher figure being preferable and being a must in match shooting. The standard groove diameter is .222". In practice, the match bullet measures not less than .224" at the end of brass, and usually not much less than this at the farthest band. Unfortunately for accuracy in match rifles, standard velocity bullets may taper from .224" at the end of brass to not much over groove diameter at the farthest band, evidently decreasing in deference to the weaker actions and dirty, rusted bores of some rifles in which they may be fired. Owing to smallness of the bullets, and subnormal ignition in some rounds, much use of such ammunition might possibly harm the bore of a fine match rifle.

The matter of .22 LR bullet diameter brings up the matter of bullet lubrication. To enter the rifled bore, the bullet must be constricted from about .224" plus to .222", a shrinkage of about .002". To occur without bullet scuffing, this requires the help of lubrication. If the lubrication is satisfactory, the cartridge may be seated in a proper match chamber, extracted for examination, and found to be properly printed without the rough, bright appearance which indicates abrasion. Xpert usually meets this test, and so does yesterday's match ammunition, but today's Mark III and Remington Rifle Match may not meet it.

What happens when the .22 lead bullet is insufficiently lubricated? Entering the bore, it may leave in the chamber throat a deposit of lead, either as a plating or else as free lead. With continued firing the deposit is built up until presently the bullet enters scuffed and undersize, fails to be printed properly by the lands, and if the deposit becomes excessive the performance suffers, and possibly the condition of the bore suffers too. If the deposit is free lead, a pull or two of a wire bristle brush will permit the lands to print again; but, unless the lubrication is improved, the cycle may be repeated.

A few years ago the custom of dipping bullets in a sponge soaked with Hoppe's No. 9 spread like wildfire among smallbore shooters. Your author followed suit, but soon discovered that the thin fluid seeped down into the trigger mechanism of a 52-C rifle and rendered the mechanism inoperable until it had been flushed thoroughly with gasoline or lighter fluid.

Now apparently the only good purpose which is served by No. 9 on the bullet is that of lubrication. If this is all, why not use a liquid which is intended for lubrication? So thinking, a few months ago the author adopted the custom of dipping bullets in a sponge soaked with gun oil. To date, no further trigger trouble with the 52-C has developed, and the oil has prevented the return of throat leading.

At expense of becoming personal, the author now proceeds to discussion of misfortune with a 52-B barrel in what almost proved to be the end of its long and illustrious life. The circumstances which evidently brought about the mishap were a worn firing pin nose and undersize bullets. I was gallery shooting Remington Kleanbore when something stung my trigger finger so severely that I looked to see whether blood had been drawn. No mark was found, and the incident was forgotten until cleaning time, when the rod caved in under my hand with the patch just six inches ahead of the breech.

Instantly I knew that the barrel was ringed. How it happened was a mystery then, and still is a mystery, a year later. It had happened in the course of a string in which every shot, including the blowback, was accounted for by a hole in the paper. The place where the blowback bullet went furnished no clue, as I had put on a tube sight and forgotten to make the screws more than finger tight. The Bernoulli Theorem furnishes the only explanation which I can devise. As the bullets in the lot were small, supposedly the one in this round was abnormally small. Supposedly also, the combination of weak primer and worn firing pin nose caused the charge to hangfire, or at least to slowfire, in two distinct stages. The first stage merely forced the small bullet six inches into the bore. An instant later the second, full blast, surged in behind the bullet. Arrested by the bullet in its travel, the surge instantly became pressure energy that ringed the barrel and caused the blowback which stung my finger.

Though the ring could be unmistakably felt with any kind of patch, it could not be seen. In occasional use thereafter the rifle shot very well for almost a year, although I suspected, what proved to be fact, that every shot cut the flare bigger. In recent test a 194 score for 20 shots prone with Kleanbore occasioned a mild surprise, but that was nothing compared with surprise at the result of 40 shots with Rem. Match of proven merit. In each 20 shot string one was out account of a badly tipped bullet, the second one tipped at an estimated 45°.

I found that both the ring and its shadow could now be plainly seen. Smoke could be blown through the bore while a bullet was positioned in the swell. After the barrel had been later sawn in two, a brass case would enter on top of the lands. From the wreck 2 1/4 inches of good barrel were retrieved and used to rebarrel the action, making a Win. 52 carbine, which seems to be accurate.

Though the combination which ringed this barrel might not come up again in a million rounds, the moral is obvious. The nose of a firing pin should be kept in proper condition, not only for accuracy, but for sake of the rifle itself. Because this rifle was a standby I had been remiss, though knowing that the corners of a firing pin may break off or wear round, and sometimes need attention after as little as a year of use.

That the barrel was ringed with only the components of a single cartridge in it proves that it would be folly to try to blow out an obstruction with powder, as many a shooter might try to do, should the occasion arise. It is most natural to believe that no harm would follow if the hammer were snapped on a round from which the bullet had been pulled, but such a belief could be no farther from the truth. It is stated on authority that, unless the obstruction is very close to the chamber, a .22 rimfire barrel will be ringed, and a .30'06 may be split at the obstruction. Primer, powder, a firing pin blow, and an obstruction some inches ahead of the chamber are all it takes to ruin a barrel.

In the building trades many years ago some electricians would use powder in attempt to open obstructed conduits that were buried in concrete. The firing device consisted of a short nipple of 3/4 inch pipe that was coupled at one end to the obstructed conduit, and at the other was closed by a pipe cap after a 12 gauge (Continued on Page Nineteen)

HARVEY DONALDSON WRITES

Dear Phil:

Here goes for my June letter. I hope to be fishing, up in Maine, when your next issue goes to press, so will send this along at once.

Have been reading over again the kind remarks of Mr. Wright, that were shown in his letter that appeared in the March Precision Shooting. I wonder if Mr. Wright thoroughly understands just WHY the light 110 grain open point Sierra bullets shoot so well in the ten inch twist .30 cal. rifles.

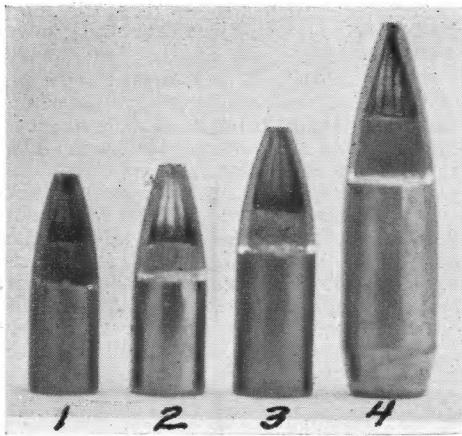
So that other shooters may also understand this little matter I am showing a picture of some bullets with this letter that may show exactly just why the short open point bullets will do well in the quicker twist rifles.

You already know I have been making my own metal case bullets ever since Niedner made my first swage some fifty years ago, and during this time I have found out considerable about bullet making, not shown in loading manuals.

When I first started experimenting with the .257 Roberts case, as brought out by Remington with the ten inch twist, I had trouble in getting any accuracy with the use of the light weight bullets. SO—I tried several different lengths hulls to see what might be done about it. After trying out a number of different weights of bullet, in this .25 cal. rifle, I got the idea if a longer hull with a SHORTER core was used, it might make a better balanced bullet. I took the hull used normally for the ninety grain bullet but used a short core so the bullet weighed only eighty grains. This bullet is shown as number three in the illustration. With the extra air space in FRONT we get a better balanced bullet. This type of bullet not only will give far better accuracy in the quick twist .25 cal. barrels but it also gives wonderful results in the 14" twist .25 cal. barrels.

Bullet number one is my open point .22 cal. in 50 grain as I make them with a longer hull. Note air space. This bullet gives the best accuracy of any I have tried, and it is the one I used while experimenting with my own .219 Don. design some twenty-five years ago. Frank Snow, of the Sierra Company, knows of my early experimenting in bullet making, so we will examine carefully the bullet shown as number two. This is a 60 grain 6 m/m open point Sierra bullet, and I would have you note the air space in point of bullet. It may come as a surprise but this particular bullet will give far BETTER accuracy than ANYTHING I have ever tried in this caliber. Until further tests I am not quite ready to reveal the barrel twist, but this will come later. Some of the EXPERTS (and is the country full of them) will tell you the only bullet to use in a 6 m/m barrel is the 90 grain bullet. I would have you note well the proportion of this light weight 6 m/m bullet to the .22 cal. bullet shown as number one, that has given me the best results in a .22 cal. barrel. In bench rest shooting it is the accuracy we obtain from 100 to 200 yards that counts, and not what the rifle will do at 500 yards.

Common sense should dictate the smart thing to do is to SELECT the bullet that gives best accuracy at the ranges we expect to use it. Understand, I have no quarrel with those who wish to shoot 100 grain bullets in a 6 m/m barrel, but I was brought up in the belief that where you wanted a heavier bullet, in ANY caliber, better results would be obtained if the shooter used a rifle of LARGER



caliber.

Bullet number four in the illustration shows the new .30 cal. 168 grain Sierra International bullet, which happens to be the MOST accurate I have ever fired in this caliber. I would call the readers' attention to the fact that this particular bullet SHOWS the air space in front just the same as all the other bullets in the print. This idea of plenty air space in each bullet shown is no accident, as they were planned with that feature in mind. And this idea may explain to Mr. Wright just why he has found that the short open point light weight bullet in .30 caliber shoots so well in the 10 inch twist.

Now we come to this matter of proper twist in a rifle of 7 m/m caliber with MODERN components. My first rifles in this caliber all had the quick twist, but today we have better powder than was used sixty years ago. Thus today we can get a higher velocity, with LESS pressure, in the 12 inch twist, which may well be the reason one can still stabilize the heavier bullets in the slower twist. While the .30-06 barrels use the ten inch twist, when the Winchester Company brought out their long range bull gun in .300 Magnum caliber, they used the 12 inch twist, and this for 1000 yard shooting. Could it be that in their testing they found the slower twist was better? So, if it works out O. K. in the .300 Magnum, why not in the 7 m/m caliber? With the slower twist one may obtain .270 cal. ballistics in the 7 m/m case, with ten grains LESS powder. Also, the powder loads used in the 7 m/m case will FILL the case completely, which I have found in my own testing is a decided advantage. Air space is O. K. in the front of a bullet, but I want NONE in the front of my own ammunition.

Mr. Wright can have no fear of my buried barrel rusting, as it was embalmed properly in grease before burial, and the last time it was dug up for inspection it was in perfect condition.

As to shooting minute of angle groups; most ANYTHING can happen when firing a five shot group, but if one will sit down and fire, say 100 shots, he may get the idea he is NOT using a bench rest rifle. The AVERAGE accuracy is what counts, and not what may be obtained in firing one lucky group. So I still will maintain that to get minute of angle groups, one should hardly expect to find this accuracy from a light weight rifle chambered for any of the modern MAGNUM cases.

I would have my readers know that all of the above data is just one man's opinion, as obtained in my own experimenting.

Sincerely,

Harve

THE SWEANY "SITE-A-LINE"

That reliable optical instrument, the Sweany Bore Sight Collimator, which has made it possible to set rifle sights **before shooting** more conveniently and with greater accuracy than normal "bore sighting" of bolt action rifles, in addition to accurately pre-sight closed breech weapons, has been undergoing some changes.

First, the name has been changed to the Sweany "SITE-A-LINE" Precision Optical Bore Sighter, Sportsman's Model.

Previously this collimator outfit was sold as a complete kit of the collimator and barrel spuds for all common calibers and the cost, while a good investment for the gunsmith doing a considerable amount of sight work, was too high to make the kit practical for the average individual rifleman. Now the basic unit sold is the collimator and **one** barrel spud and the cost of this unit is \$37.50 and barrel spuds for additional calibers desired for \$3.50 each. That may not sound "cheap," and it isn't, but it should be remembered that the collimator is a precise optical instrument and the barrel spuds are ground for matching precision. For the individual shooter who uses several rifles and frequently changes scopes from one rifle to another, "sighting-in" ammunition savings can make the cost of a SITE-A-LINE kit for his various calibers an investment rather than an expense. For the part-time, small volume gunsmith who does a considerable amount of sight fitting and "sighting-in" of rifles, especially in the usual rush just before hunting season, the SITE-A-LINE kit for the common calibers in his area is an investment that he can ill afford **not to make**.

Along with the price decrease, the collimator is improved over the earlier models. The lens seems to give a sharper and brighter image of the collimator cross-hairs, and the cross-hairs are somewhat coarser, both of which are a very real aid for use with the higher powered target scopes.

What the SITE-A-LINE accomplishes is to give one a sight-line which is **parallel to the bore axis**. This sight-line is, of course, the height of the sights **above** the bore axis, and compensation has to be made for this as well as for the "barrel-whip" of any individual weapon. However, this collimated sight-line is consistently more accurate than can be obtained by usual bore-sighting of bolt action rifles, and the collimating can be done anywhere without need for a vise for holding the weapon or a target to aim at. It is especially valuable for obtaining a sighting starting point for closed breech weapons such as the lever and pump actions and the auto-loaders.

In use; the barrel spud of the proper caliber is clamped into the spud "V" of the collimator body, the spud then inserted into the muzzle of the barrel and the weapon pointed at a near-by, reasonably well lighted, flat field. The lighting or the type of field pointed at is not at all critical for metallic sights or the lower power hunting scopes, but it is for the higher power target scopes and becomes increasingly critical as the power of the scope increases. No device is necessary for holding the rifle while collimating; it may be held at the shoulder as in normal sighting but it is more convenient to rest it on something in order that one hand may be free to manipulate the sights while watching the movement in the collimator.

The sight is adjusted to bring the normal sight line into intersection with

the cross-hairs of the collimator. While this sight adjustment merely brings the **sight line parallel with the bore axis**, it will in the center-fire calibers be usually close enough to put a first shot in the six-inch black bull of the 100 yard small-bore target at 100 yards range. For .22 cal. target rifles with high sight-line for both scope and metallic sights, the first shot from the collimated sight-line will strike several inches low at any range but the horizontal deviation will usually be very small.

The final accurate sighting for the rifle will have to be determined by shooting, with adjustments from collimated sights above bore axis and for "barrel sight line made to compensate for height whip" characteristics of any particular weapon with a particular load. These shooting adjustments will ordinarily not be very great. For my own three .30 cal. rifles (a .308 featherweight, a sport-NRA Sporter), two with 4X hunting erized Krag and a .30-06 Springfield scopes and one with metallic sights, each sighted for point-of-aim impact at 200 yards with full power hunting loads, the deviation from collimator sight setting is so small that with the collimator setting, quite well placed hits could consistently be made on deer size game at normal woods shooting ranges.

Once the actual accurate sight setting is determined by shooting, then go back to the collimator again and determine the exact deviations of the correct shooting sight setting from the collimated sight-line, and record those deviations for both vertical and horizontal, in both exact amount of deviation in minutes-of-angle and the direction of the deviations. With one minor exception, these recorded deviations from the collimated sight line will be constant with any sight for that particular rifle and load at the particular range sighted in at. You can change from one scope to another, of different power and/or make, or to metallic sights, and by first getting your collimated sight-line, and making your recorded deviations from that, be quite correctly sighted in. The one minor exception mentioned is that changing to sights with a different height above bore axis can make some change in point of impact with your recorded corrections.

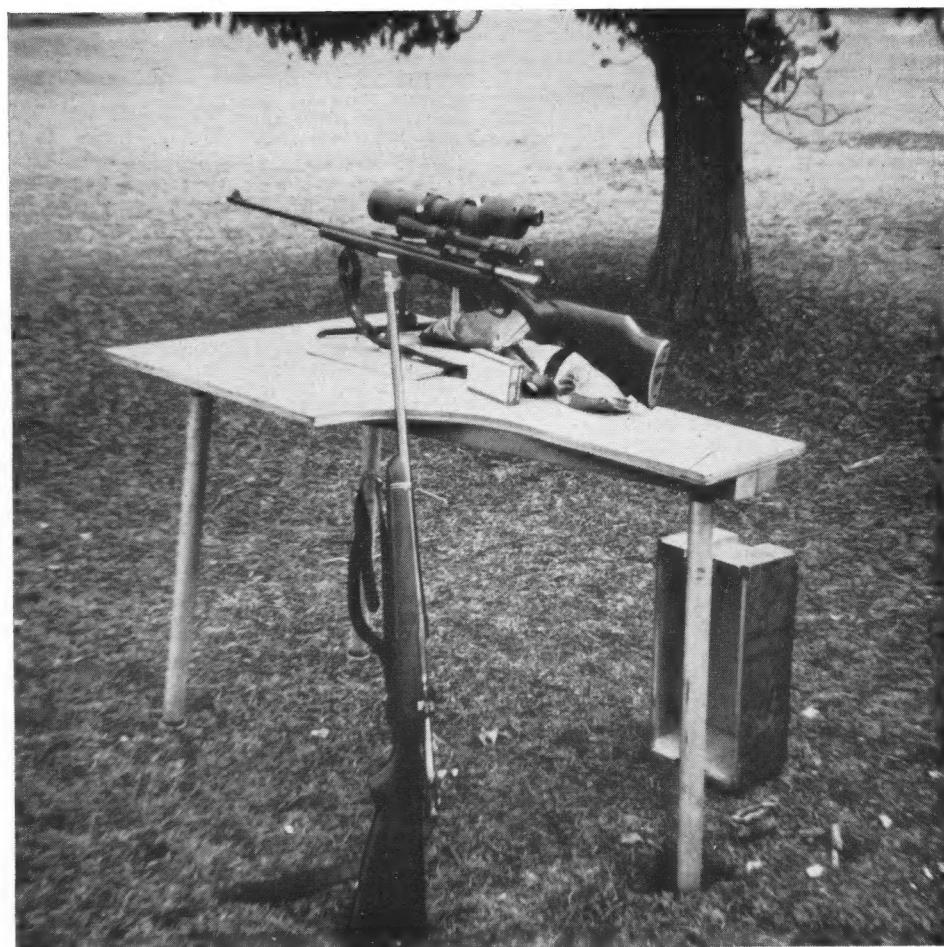
The most valuable feature of this "constant" of deviation from collimator sight-line, for the individual rifleman, could be in being able to check a possible accidental "knocking sights out of line," and to be able to accurately reset the sights without a lot of shooting, while on an important and perhaps quite expensive hunting trip. One incident of that type could make the cost of the SITE-A-LINE seem like "small-change."

The SITE-A-LINE is marketed by the ALLEY SUPPLY CO., P. O. Box 458, Sonora, California. John B. Sweany, who has designed many other optical aids for shooters, is the designer and maker of the SITE-A-LINE. The prices mentioned are the retail prices. Trade discounts are allowed bona fide dealers.

NEW SISK .22 BULLETS

By Kent Bellah

R. B. Sisk, Sisk Bullet Co., Iowa Park, Texas, is making 45 and 50 grain Hollow Point **Revolver Bullets**. These are identical in design to his 37 grain number, that I designed especially for the Harvey .224 Kay-Chuk conversion. They have the same large hollow point, the same pure lead core, flat nose and thin jacket. The jackets are longer, to allow the same lead exposure. Initial tests in-



The quite satisfactory portable shooting bench that the editor uses. Dis-assembled, the outfit fits into the trunk of the family car with plenty of room for other shooting gear along with it. The 1 1/4 inch pipe legs screw into floor flanges on the bottom of the bench top.

dicate these give fast, FAST blowup with moderate charges in rifles, such as the caliber .222 Remington.

This first report in print is to tell the shooting world the news, and some facts for the record. Jim Harvey, Lakeville Arms, Lakeville, Conn., made a sweet little centerfire conversion of the Smith & Wesson K-22 rim fire revolver, using a K-Hornet chamber. Hornet cases have to be trimmed .050". The gun has no noticeable recoil and accuracy is superb; velocity is higher than any commercial cartridge ever made. My first gun was the easiest loading and the best shooting revolver I ever owned. I tried it on Texas jacks and other varmints with excellent results.

Stan Sprague, Editor of "The U. S. Handgunner" (59 Alvin St., Springfield, Mass.) tried one on New England chucks. Stan tells me 'chucks are tougher varmints than our Texas jacks and prairie dogs. He says, "They often walk away with even a .270 in the belly. I've seen them almost cut apart with a .220 Swift and still crawl 50 feet." Stan blasted a number with rifle bullets in the Kay-Chuk, and got plenty (too much) penetration, and inadequate bullet blowup. Rifle bullets were simply too tough for fast blowup at handgun velocity.

The conversions filled a real void in the handgun field. The easy-to-load and easy-to-shoot sporters gave precision accuracy, and deserved a better bullet, one designed for a handgun. Lads who can't hit the side of a barn with heavy recoiling big bores can get a new thrill in sacking up varmints and small game with a short tube, using potent loads. The guns are wonderful for plinking and tar-

gets with 2.5 to 3 grains Bullseye. Handgun loads shoot well in companion caliber rifles.

Ralph Sisk and I got together. Ralph is a Hi-V .22 rifle fan. He agreed to tool up for the bullet design I suggested. From my experience with Harvey Jugulars, I thought a modified version would be perfect. It wasn't. It shot well, but even with the thin, short jacket and pure lead core it simply didn't blowup fast enough to compare with factory Hornet cartridges in a rifle. We tried shorter jackets, adding a real decent hollow point cavity. The final 37 grain **Revolver Bullet** design actually exploded faster than factory Hornet loads in a rifle. It was a whale of a success.

Harvey, never satisfied with firearms, found the new S & W K-22 Magnum Rimfire revolver made a nice Kay-Chuk Standard conversion, using Hornet cases trimmed the same .050" in a standard Hornet chamber. This conversion allowed using 45 and 50 grain bullets. Some of his customers wanted heavy bullets for hunting deer. I didn't go along with the idea, and still don't for the average guy, although I'm well aware that even the lowly .22 rimfire will kill deer. A Texas game warden told me jacklighters generally used a .22 rimfire, often a cheap single shot pistol, as it was not noisy, and could be thrown away if a warden came along. These lads get close, place a hit with accuracy, and bag a deer with nearly every shot. Their "clean kill" record is better than many inexperienced hunters with powerful rifles.

At any rate, I didn't see the advantage of a heavier handgun bullet for var-
(Continued on Page Sixteen)

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1960 BENCH REST MATCHES

EASTERN REGION

Detroit, Michigan: July 24; Detroit Bench Rest Club, Jack Roy, Sec'y, 2446 Hewitt St., Hamtramck 12, Mich.

Staunton, Virginia: Oct. 8-9; unrestricted bench rifle—varmint rifle if 10 or more entries; Stonewall Rifle & Pistol Club, Jim Perry, Box 471, Staunton, Va.

Augusta, Ohio: June 18-19, July 16-17, Sept. 17-18; Reed's Run Rifle Range, P. O. Box 66, Augusta, Ohio.

Dryden, New York: (Varmint rifle matches) June 19; July 9-10 (Eastern Region Varmint Rifle Championships), Sept. 11; Dryden Fish & Game Club, Russ Cuatt, Sec'y, 113 Park St., Ithaca, New York.

Plainfield, New Hampshire: July 16-17, Sept. 18; Plainfield Rifle & Pistol Club, Leslie R. Stone, Sec'y, Plainfield, N. H.

Easton, Ohio: Aug. 6-7; Chippewa Rifle Club, Nelson Berger, Sec'y, R. D. 1, Box 192, Marshallville, Ohio.

Southboro, Mass.: June 26, Aug. 14, Oct. 16; Southboro Rod & Gun Club, c/o J. W. Baldwin, 5 Milk Street, Westboro, Mass.

Lewistown, Penna.: July 2-3 (Eastern Region Bench Rest Rifle Championship); East End Blue Rock & Sportsmen's Club, c/o P. J. Aurand, Milroy, Pa.

Johnstown, New York: Sept. 3-4 (Annual Labor Day Shoot); Pine Tree Rifle Club, Wm. N. Hare, Sec'y, R. D. #1, Johnstown, N. Y.

MID-CONTINENT REGION

Kansas City, Kansas: Aug. 6 (Mid-Continent Region Championship), Oct. 15; Mill Creek Rifle Club, Inc., L. F. Carden, Sec'y, 2211 No. 44th St., Kansas City, Kans.

Tulsa, Oklahoma: July 16, Aug. 14, Aug. 23-24-25; National Championship Sept. 18; Tulsa Bench Rest Rifle Club, E. A. Ander-

son, Sec'y, 3604 So. Toledo, Tulsa, Oklahoma. Wichita, Kansas: July 2-3, Oct. 2; Wichita Bench Rest Rifle Club, Larry Engelbrecht, Sec'y, 122 Gow, Wichita 3, Kansas.

MISSISSIPPI VALLEY REGION

St. Louis, Missouri: Unrestricted bench rifle, July 10 (Mo. State Championship) Oct. 2; Varmint and Sporter, June 26, Aug. 14; Bench Rest Rifle Club of St. Louis, James R. Ernst, Sec'y, 2230 Ferncliff, Kirkwood 22, Mo.

Florissant, Missouri: Varmint and unrestricted rifle matches; contact Richard E. Davison, Sec'y, Nine Ring Sportsman's Club, Route 1, Box 812, Florissant, Mo.

Windsor, Illinois: July 23, Aug. 6 (night shoots), Sept. 25 (day—Mississippi Valley Regional Championship); Windsor Rod & Gun Club, Robert Adams, Windsor, Ill.

NORTHWEST REGION

Renton, Washington: Unrestricted bench rifles, June 25-26, July 30-31; Varmint and Sporter matches, July 10; Seattle Precision Shooters Club, Roy E. Meister, Sec'y, 3938 Ashworth, Seattle 3, Wash.

SOUTHWEST REGION

Yreka, California: Varmint, Sporter and unrestricted bench rifles, Sept. 3-4; Yreka Rifle Club, Inc., c/o Ray Jones, 508 Knapp St., Yreka, Calif.

GULF COAST REGION: San Angelo, Texas, National Varmint Rifle Championships, Aug. 18-19-20; contact F. L. Magoon, Box 909, Kerrville, Texas.

Custer, South Dakota: July 30-31 (Unrestricted, Varmint and Sporter); contact

NORTH CENTRAL REGION

Walt Siewert, Custer, So. Dak.

Buffalo, Wyoming: July 16-17, Mid-Summer Bench Rest Matches, Buffalo Outdoor Rifle Club, Martin Pelloux, Clearmont Rte., Buffalo, Wyo.

Iowa Falls, Iowa: July 2-3, Sept. 3-4; unrestricted bench rifle, varmint and sporter rifles; Verle W. Hunt, R. D. #2, Ackley, Iowa.

N. B. R. S. A. INC. SHOOTING RULES REQUIRED

All shooting competitions which are approved as National Bench Rest Shooters Association, Inc. registered shoots must be conducted in accordance with the current NBRSA shooting rules and regulations. There can not be any exception to this requirement.

The shooting rules, equipment and rests specifications for the unrestricted heavy bench rest rifle class are the same as they were in 1959. There are two classes of rests for the "unrestricted rifles," the "open class" and the "limited class," as specified on pages 2 and 3 of the 1959 rule book. Either or both classes may be included in the program for a registered match, but which class or classes will be permitted must be stated in the match program.

The arms specifications and rules for the Varmint Rifle and Sporter Rifle classes in 1960, as amended by the NBRSA Directors, are:

HEAVY VARMINT RIFLE The rifle may be of any caliber, total weight with scope not to exceed 13½ pounds, no limitation on power of scope. The barrel diameter must not exceed .9 inch at muzzle or 1.25 inch at breech and at no point between breech and muzzle shall the barrel be larger than it would be if the barrel had a straight taper from breech to muzzle. The rifle stock shall be a plain, commercial, conventional design, width not over 3 inches at any point, with no added guides or slides allowed.

LIGHT VARMINT RIFLE The rifle may be of any caliber, total weight with scope not to exceed 10½ pounds, and scope not to exceed 16X. The rifle barrel and stock restrictions the same as for heavy varmint rifles.

SPORTER RIFLE The rifle may be of

.23 caliber or larger, weight not to exceed 10½ pounds with scope, scope not to exceed 8X in power. The rifle barrel and stock restrictions the same as the varmint rifle classes.

PERMITTED REST FOR HEAVY VARMINT RIFLE CLASS, LIGHT VARMINT RIFLE CLASS AND

SPORTER RIFLE CLASS: The maximum rests allowed shall be an adjustable rest in front with rifle resting on a contained sand bag and at rear, under buttstock, a plain, non-rigid, soft, pliable sand bag, on bench top without other support.

TARGETS: Official targets for the National Varmint Rifle Championships shall be the BR-100-2 target at 100 yards and the BR-200 target at 200 yards. At other registered matches the BR-200 target may be used at 100 yards range and the BR-300 target used at 200 yards range, at the option of the match sponsors.

TIME LIMITS for both Varmint and Sporter classes shall be the same as for unrestricted bench rest rifles:—for 5-shot matches, shall be ten (10) minutes for the first target of the first match of the day, or for the first target of the first match after a distance change. For succeeding matches the time limit shall be seven (7) minutes for each five (5) shot match. For ten (10) shot matches the time limit for the first match of the day or after a distance change shall be fifteen (15) minutes, and for succeeding matches, twelve (12) minutes.

NATIONAL MATCH COURSE: The National Match Course of fire for both heavy and light varmint rifle classes shall consist of five 5-shot matches at 100 yards and five 5-shot matches at 200 yards. (No national course of fire for sporter rifle class has yet been officially approved by the NBRSA Directors.)

INTERPRETATIONS: A "conventional, commercial design of stock" is a stock of a design such as one would buy over the counter on a rifle manufactured by one of the commercial gun companies. The butt stock could be rounded or flat but "no added guides or slides" means added by screwing on, molding, or any other method, including being incorporated in the building of the stock itself.

The Varmint Rifle and Sporter Rifle programs were set up to permit the hunter-rifleman to compete in bench rest matches with the rifle he uses in the field for hunting, against others with similar equipment, and the rules were made to prevent the use of "baby bench rest rifles" designed for the one and only purpose of bench rest competition.

Since no National Match course of fire or specific target has been officially adopted for the Sporter Rifle Class, the sponsors of the 1960 **National Varmint Rifle** Championships are at liberty to designate the course of fire and target for their Sporter Rifle Class matches, so long as all **official rules** for firing those matches are observed.

Irven M. Mohnkern, President
N. B. R. S. A., Inc.

GAL NINETEEN SHOOTING FROM THE SECRETARY'S OFFICE
With the exception of 1000 300 meter targets (BR-300) the stock of official bench rest targets at the secretary's office in Lyndonville, Vt. is completely exhausted. It is not planned to stock any more targets at Lyndonville this season.

The official NBRSA bench rest targets may be purchased from WISLER WESTERN ARMS, INC., 205 Second Street, San Francisco 5, California, the manufacturers of the targets which have been stocked at the Lyndonville office. The list prices of the targets, F. O. B. San Francisco, are: Official tournament 100 yard targets (BR-100-2), \$2.25 per hundred; 200 yard targets (BR-200), \$2.25 per hundred; 300 meter targets (BR-300), \$3.00 per hundred. Cost of transportation is additional. We believe clubs would be allowed discounts on quantity orders. Clubs in the East that may order targets from San Francisco would be wise to place their order at least four weeks before they will need the targets to use.

NO NEW RULE BOOKS are being printed this year. The only changes in rules are for weights, stock dimension and scope power changes for Varmint and Sporter Rifle classes and those rules for 1969 are published in this NBRSA section, this month. There is a limited supply of the 1959 rule books available from the secretary's office and the cost is 25¢ each, to cover cost of printing, handling and mailing.

BENCH REST MATCH RESULTS REED'S RUN RIFLE RANGE, OHIO AGGREGATE WINNERS

Five 5-shot matches at 100 yards	
Paul Gottschall	.277
Omar Rinehart	.310
Lowell Shelt	.316
J. D. Whetstone	.343
Five 5-shot matches at 200 yards	
Earl Thompson	.407
Clarence Deem	.505
Maynard Toutant	.561
Bernice McMullen	.562
Five 10-shot matches at 100 yards	
Earl Thompson	.491
Ernest Scafuri	.531
Paul Gottschall	.534
J. D. Whetstone	.552
Five 10-shot matches at 200 yards	
Omar Rinehart	.631
Earl Thompson	.666
Clyde Yockey	.684
Harold Haynam	.695
National Match Course Aggregate	
Earl Thompson	.579
Clyde Yockey	.624
Omar Rinehart	.646
J. D. Whetstone	.648

A steady downpour of rain for both days of the May 7-8 registered shoot at Reed's Run Rifle Range, Augusta, Ohio, no doubt dampened the spirits of the 24 competitors but did not seriously affect their shooting.

KANSAS CITY, KANSAS AGGREGATE WINNERS

Five 10-shot matches at 100 yards	
W. S. Coleman	.362
L. F. Carden	.372
H. W. Barton	.390
J. W. Mayer	.430
Al Walters	.436
Five 10-shot matches at 200 yards	
Al Walters	.484
W. C. Farrar	.493
H. G. Baucher	.494
W. S. Coleman	.497
H. W. Barton	.498
National Match Course Aggregate	
W. S. Coleman	.4295
L. F. Carden	.438
H. W. Barton	.444
Al Walters	.460
J. W. Mayer	.494

Eleven shooters from Missouri, Kansas, Oklahoma and Texas participated in Mill Creek Rifle Club's registered night

shoot at Kansas City, Saturday night, April 30th. Conditions were reported fairly good but for temperature near freezing, the weather having turned from the comfortable 70's to 1½ inches of snow on the ground Saturday morning. W. S. Coleman of Burleson, Texas and J. W. Mayer of Kansas City tied for small group at 100 yards with .270. Coleman shot smallest group at 200 yards—.640 inch.

TULSA, OKLAHOMA UNRESTRICTED BENCH REST RIFLE

Five 10-shot matches at 100 yards	
Horace Powers	.584
Ed Grishow	.628
A. L. Day	.629
Five 10-shot matches at 200 yards	
E. A. Anderson	1.088
Ed Brishow	1.135
Horace Powers	1.138
National Match Course Aggregate	
Horace Powers	.861
Ed Grishow	.882
Chas. Neumann	.930

VARMINT RIFLE

Five 5-shot matches at 100 yards	
Jim Saylor	.491
L. E. Cornelison	.522
A. W. Ham	.590
Five 5-shot matches at 200 yards	
L. E. Cornelison	.8865
A. W. Ham	.901
James Maxwell	.9865
Two Range Aggregate	
L. E. Cornelison	.7042
A. W. Ham	.7455
Jim Saylor	.826

At the Tulsa Bench Rest Rifle Club's registered day-time shoot on May 15th, 8 participated in the unrestricted rifle class and 7 in the Varmint Rifle class.

EASTON, OHIO

A total of 24 shooters participated in an unregistered bench rest match conducted by the Chippewa Rifle Club at their Easton, Ohio range. All shooting was at 100 yards range.

Nine shot five 3-shot matches with Sporter rifles. H. Baughman won the five match aggregate with an average of .590". Lawrence Rucker was second with .712".

Fifteen shot five 5-shot matches with Varmint Rifle (13 lb. limit). George Kelby won the five match aggregate with an average of .464", and Rucker was second with .512".

Eight shot three 5-shot and two 10-shot matches with the unrestricted rifles and Rucker won this one with an average of .401". K. Turner was second with .512".

VARMINT RIFLE AT DRYDEN, NEW YORK AGGREGATE WINNERS

Five 5-shot matches at 200 yards	
Ross Sherman	.792
Ed Shilen	.820
Chester Andrews	.825
Ray Wilson	.847
Arthur Blensinger	.965
Five 5-shot matches at 100 yards	
Ed Shilen	.517
Clyde Bonnell	.596
Ray Wilson	.598
Crawford Hollidge	.629
Arthur Blensinger	.669
Grand aggregate	
Ed Shilen	.668
Ray Wilson	.722
Ross Sherman	.781
Chester Andrews	.790
Arthur Blensinger	.817

Fourteen shooters from New York, Pennsylvania and Massachusetts competed in this registered Varmint Rifle shoot sponsored by the Town of Dryden Fish and Game Club, May 15th. Club secretary Russell Cuatt reports on the shoot as follows:

"On May 15th the Dryden Fish & Game Club held its first registered Varmint Shoot. Because of an unusually late Spring, and ten straight days of rain preceding the shoot, the Club was unable to get the shooting benches and shooters' facilities installed, and the shoot was almost called off. But on Saturday the rain eased up and the club members, with the aid of Crawford Hollidge and Chester Andrews (who arrived early for the shoot) put on rubber boots and worked in ankle deep mud to get the range in shape for the shoot. Our Club extends its thanks to fellows like Hollidge and Andrews. It's the good sports such as these that keeps the bench rest game going.

"Although we were a half hour late getting the shoot started, and the shooters had to walk to and from the benches through gooey mud, the shoot went off without a hitch, and everyone went home happy and said they would be back next month.

"During the 200 yard shooting there was a strong gusty wind coming from 12 and 3 o'clock, and a good bit of mirage which seemed to know exactly when to reverse itself and give the shooter a wide shot. I think everyone got caught by this condition sooner or later. During the 100 yard shooting the mirage eased up, but there was still that strong head wind. A head wind seems to be the hardest for shooters to dope and it showed on the targets.

"Ross Sherman of Dryden, N. Y., had the smallest 200 yard group of .898, and Clyde Bonnell of Pine City, N. Y., had the smallest 100 yard group of .262.

"It is interesting to note that the top five shooters used Sierra BR bullets except for Shilen who made his own.

"Another item of interest was the appearance of a new bench-rest type action. This action is tubular in cross-section and has no cut-outs except for the loading port. The action was designed by Ed Shilen and is being built by Ed Shilen and Ross Sherman.

"Both Sherman and Shilen used these actions with Hart barrels to take the 100, 200 and grand aggregates; both rifles in .222 caliber. Chester Andrews shot a .222 Magnum on a Douglas barrel and Remington action. Ray Wilson shot "Old Betsy," a .219 Don on a Douglas barrel and Mauser action. Art Blensinger shot a .222 on Douglas barrel and Mauser action. Clyde Bonnell got that small 100 yard group with a .222 on a Mauser action; make of barrel unknown.

"Five new members were signed up at this shoot, and every one of them were bubbling over with enthusiasm. I think they are in the game to stay."

SAN ANGELO, TEXAS

Mr. Ferris Hefington of Corpus Christi, Texas, last year's State Champion, repeated this year by winning the Texas State Open Class Championship grand aggregate for the National Match Course with a M.O.A. average of .620.

One of the high-lights of the shoot was the fine shooting by Mr. G. W. Scott of Waco, Texas, who was a participant in the Open Class matches for the first time. Mr. Scott won the 100 yard matches with an aggregate of .510. He (Continued on Page Twelve)

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CRAWFORD H. HOLLIDGE

Marstons Mills, Mass.

Bench Rest Match Results

(Continued from Page Eleven)
 won the trophy for the smallest group at 100 yards with a .265 and he also won the trophy for smallest group at 200 yards with .770 inch.

Mr. W. C. Farrar of Grand Prairie, Texas, won the 200 yard trophy with a M.O.A. aggregate of .680.

In the first match of the 200 yard National Match Course four participants fired groups under one inch.

At the annual meeting of the Texas Bench Rest Shooters Association, Mr. Henry Spencer, Box 1243, San Angelo, Texas, was elected President; Mr. R. R. Robinson, Box 586, Woodville, Texas, Vice President; and Mrs. Marie Spencer, Box 1243, San Angelo, Secretary-Treasurer.

F. L. Magoon
End of official National Bench Rest Shooters Association, Inc. section.

BEGINNERS CORNER

By Robert Stinehour

PUT THE BLAME WHERE IT BELONGS

I'm often amused at the oft-heard remark, "My gun shoots better than I can hold it." Most everyone has heard or said it at some time or other, if they have spent much time around "gun nuts." The trouble is that about 90% of the time it isn't so. In my opinion, if your barcher won't hold .300 pretty regular, your varminter .500 and your sporter .750, they are not shooting better than you can hold them. I don't own a sporter that will do .750 (few people do), or a varminter that will shoot better than I can hold it, but my bench gun will "out do" me.

A rest shooter is in a pickle pretty much of the time. He doesn't want to blame his equipment, he doesn't want to blame himself too much, so most of the time he cries "condition." For one to improve their shooting they must be able to put their finger on the thing that is beating them. Many blame themselves, when their equipment is to blame. Others tear their rig apart when they get something of a condition they did not see.

At different matches I have quite a few times shot competitors' rifles (in practice) on invitation. Most times the owners thought their rifles to be "hot," yet they were not doing much winning. Their feelings are hurt when after a few shots you tell the piece isn't "shooting." Many will go on blaming themselves and you for the bad groups, refusing to believe the gun is not shooting.

Most people believe that there are more good rifles than there are good shooters, but in my opinion the reverse is so. True, there are many "hot" rifles owned by less experienced shooters, but I believe there are more experienced shooters using equipment that is not quite up to snuff, or perhaps a lot of bullets that are not as good as they think.

Put the blame where it belongs. If the equipment is at fault, check it thoroughly. Test the rifle in as near perfect conditions as possible, and test the shooter in adverse conditions. If the rifle does not "perk" in perfect conditions, one sure can't blame themselves entirely when it does not "perk" in adverse conditions.

RECCIL LUG IS IMPORTANT

The Bellows Sleeve and the Detroit sleeved action do not have a recoil lug, so I have my metal man mill a slot and install a lug with two allen screws, when I stock one of these actions.

The recoil lug is the most important part of a stocking job. One can be shoddy in some other sections of the bedding, but not with the lug. I am convinced and have proven to my own satisfaction that the guard screws should not contact wood on **any rifle** if accuracy is desired.

On these sleeves with no lug, if the guard screws are relieved, what is taking the recoil? Mr. Bellows' explanation to myself and Ernest Stuhlschuter at the Elmira bench resters' meeting two years ago, when he showed us the pilot model, was this. "With the added guard screws and much more bearing surface, friction would control recoil." Ernest and I both questioned this at the time and I still do.

I'm looking forward to running a complete test on one of these jobs, with and without the lug, and am confident the test will prove that the lug is very desirable. I would be very interested to hear from anyone who has already done anything along these lines. My address is: Robert Stinehour

M. D. 26, Route 9W
 Newburgh, New York

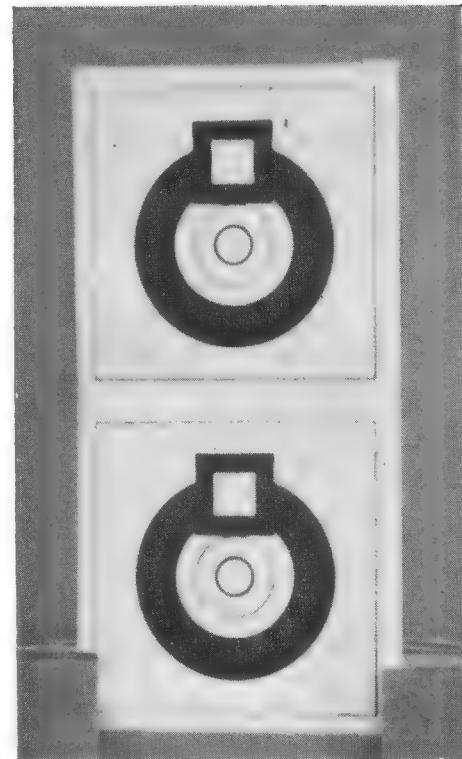
A NEW TARGET

The officers of the Texas Bench Rest Shooters Association have been devoting a lot of thought and effort toward promotion of competitive rest shooting with Varmint and Sporter class rifles in their area, and one of the results has been the designing a target suitable for the lower power scope sights used on the Sporter rifles. A sample of the target is illustrated herewith.

The aiming square and score ring dimensions are identical to those of the 200 yard target used for registered bench rest competition. They have simply blacked the two outer rings of the 200 yard bench rest target to provide an aiming point that can be used successfully with the lower powered hunting scope sights. The overall size of the aiming square provided is 2 inches square. The inner white area of the aiming square is 1 inch square. The inner scoring ring is 1 inch in diameter and each succeeding ring is 1 inch larger (1/2 inch from line to line). The center white area of the target is 3 inches in diameter, the outer black rings is 1 inch wide and the overall diameter of the scoring area is 5 inches.

I have given this target a pretty thorough trial at both 100 and 200 yards, using a Bear Cub 4X scope with the standard rather coarse cross-hair reticle, an old Weaver 440 (4X) with flat top post reticle, and a Unertl 1 1/4" 10X target scope with standard target cross-hairs.

With the Bear Cub 4X scope, at 100 yards the 3 inch white center of the target can be quite precisely centered, with enough white showing around the corners of the cross-hairs to permit quite accurate "holding off." At 200 yards the white center is blotted out with the coarse



Target designed for rest shooting with Sporter rifles.

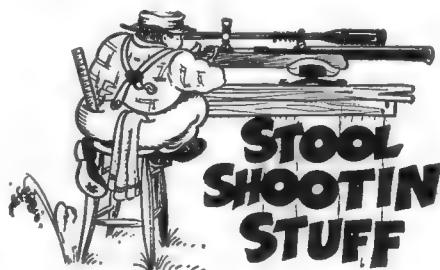
cross-hairs and they very nearly cover the 5 inch black outer ring. While center aim at 200 yards is reasonably satisfactory, accurate "hold off" would be quite a problem with this low power scope and hunting cross-hair reticle.

With the Weaver 440 and flat top post reticle, the aiming square is a bit too small and the 3 inch inner white area is a bit too big for entirely satisfactory aiming at 100 yards, but at 200 yards the inner white area offered a quite satisfactory aiming point and reasonably accurate "holding off" could be done.

I used the 10X target scope on a heavy barrel .219 Donaldson which I use for what little varmint shooting I do and in spite of the relatively large aiming areas of the target I was able to make normal groups for this rifle at both 100 and 200 yards.

For the range of scope powers permitted for Sporter Rifle Class bench rest competition (8X maximum), this target seems a very good design. I personally consider it the best target design I have used for test shooting sporter rifles with low power hunting scopes.

Our information is that the targets may be procured from the McDonald Printing Company, Kerrville, Texas, at \$15.00 per thousand F.O.B. Kerrville.



Dear Phil:

I am just home from the Staunton shoot where I lost out to better shooters, and wind and mirage, although I am pleased with the way my new barrel performed. Most of us feel that our guns shoot better than we do. In this in-

stance, I think it shoots much better than I, and good enough to take on anything on the line and come out with flying colors. We had the roughest shooting conditions that some of us old timers remember for a long time. Although the total number of shooters was not as great as in some previous years, they covered a lot of territory. Doctor and Mrs. Smith were up from Florida, and the Heflins came in from the Carolinas. Pennsylvania and Ohio as well as Maryland were well represented, and the solidly Republican area of Cape Cod was backed up by my bullet making friend, Dan Hufnail and his wife from the almost as Republican State of Vermont who joined with our Democratic friends from Virginia for a good time.

One would think from the above paragraph that I was interested in politics but it is really not the case. I can be a little emphatic once in a while over sand bags and mechanical rests but I cannot get a least bit of enthusiasm over whether a chap is a Republican or a Democrat.

The only thing that gripes me these days is why so many people want to interfere in other's business, politically, and I am still a "home ruler." I am currently incensed about the Federal Government who is coming into the Cape to take over a large area for a National Park. It is against the wishes of a majority of Cape Codders and little less than a land grab, and will not do anything but upset the economy of the area as so many of the Federal programs have done. It will prevent people from living in the homes of their parents and ancestors who built them before George Washington was "father of our country." I will bet my bottom dollar that rather than add beauty to Cape Cod, it will destroy it.

In another area, politicians would establish what is referred to as an "atomic energy park." The nomenclature is misleading because it would be nothing but an industrial site where plutonium and uranium would be extracted from partially burned out reactor fuels from atomic plants in the United States and Western Europe. The statistics seem to show the project is hazardous, no other use of the surrounding land could be safely available for man or beast, and if an accident occurred, the water supply would be polluted and the survival of all living things on Cape Cod would be questionable. Statistics also seem to show that more water will be required each month for the processing of these projects than falls on Cape Cod as rain each month, and even a fellow who thinks of little else than shooting can recognize that 75% of rainfall is evaporated through natural causes of sun, light and vegetation. I live on two beautiful spring fed lakes, the water of which is drinkable every day of the year. I hate to hear of such nonsensical projects as the foregoing, but they are already in being, and the battle to defeat them will take the assistance of everybody.

There were some nice guns on the Staunton line but nothing radically different from what we had seen throughout last summer's shooting, although Bob Hart did have a trigger on his gun that made most of us drool. It is a test model and one which may be commercially produced later if the manufacturer who designed it feels that the demand will be sufficiently great. It seems a little unsound to be looking with envy at a trigger alone that will cost nearly half as much as an over-the-counter bolt action

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rifle but such is the way things go these days. An item which is so expertly designed and manufactured necessarily sells for a pretty good sized dollar and the shooters are at a stage now where they more frequently than not recognize superiority and are willing to go without steak if necessary to add such an item to their favorite smoke stick.

I took a whole series of snapshots of rear rests, all of them designed to do pretty much the same thing, but each of them arrived at the answer in a slightly different way. The basic design was very similar to that used last year but there were a number of improvements made in the quality of workmanship and the perfection with which the mechanism functioned.

One of the things that intrigued me, and many of the other shooters, was the nifty little Volkswagen bus of which Woody (Maurice S. Wood of Carlisle, Pa.) was so proud, and he was justifiably proud, too, because it was fitted out about as nicely as anything I have ever seen on the shooting lines.

There is an old saying that peace of mind does much towards improving everything that we do, and such must have been the case with Woody, because he proceeded to give us all a good sound licking. He was so far out in front of the field in the first of the shooting that there was no catching him, and a nicer guy couldn't have won matches.

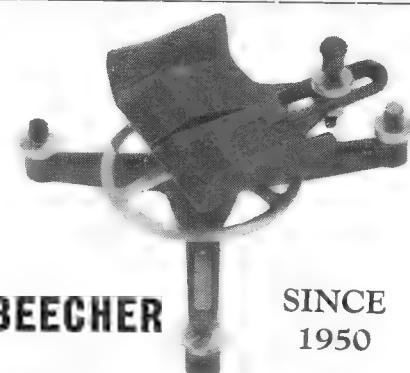
Another interesting feature that I noticed at the shoot was a great tribute to one of the staunchest friends of the shooting game, John Unertl. His contribution was living with such virility that on every gun in the first relay there was mounted a 2" Unertl scope. I did see one Lyman and one only Bausch & Lomb, and it was converted by a mount that was practical. Why such a fine American firm as B & L allowed some starry eyed designer, living on Cloud 90, to put into the hands of American shooters such a complexity of errors, is more than I can understand. It seems too bad that such a bad taste in the mouths of the shooters has occurred because of the frequent mal-functioning of just one part of an otherwise admirable product. The retail price of the model has gone up considerably while the shooters have been finding their scopes so useless that they haven't dared to bring them to the matches and are offering them for sale at a fraction of the old cost. I haven't put mine on the sales block yet, but then, I guess I am just stubborn anyway and get a kick out of trying to get mine to perform and take advantage of the good features which are inherent in the scope.

I think it is the responsibility of a columnist to give credit where credit is due, and I want to clearly point out that there are many good features about the B & L and Lyman scopes. These good features often go unnoticed while a few lines of criticism are often remembered.

As I write these words, I am mindful of the April issue in which I commented on Allen Bench's gun in such

T. H. BOUGHTON, Gunsmith

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terms that one might have suspected that I had no use for either the gun or the shooter. Allen took time to write me a very nice letter which fully convinced me that he and any other experimenters should not be driven from our game. He is new to it but a great asset, I would say, because he clearly indicates that he is not floundering around from gadget to gadget, with a copyist attitude. He is going off on new tangents purely from the experimental standpoint in an effort to develop his new theories and enter them in the open field of competition. He, like many others, have a few other incidentals in life to buy besides guns and accessories. He brings out a pretty good point when he says that he and others in the Northwest who are "non-conformist" shooters don't feel guilty about taking unfair advantage over anybody, especially when they are so far down on the winners' list." His area and every other area is showing that competition grows more keen every day, and that is one of the features that is good in the benchrest game, but there is nothing that does the game so much good as to have some of the newcomers win.

I was greatly impressed with this fact at Staunton when Dan Hufnail came in quite frequently in the upper brackets. (Continued on Page Fourteen)

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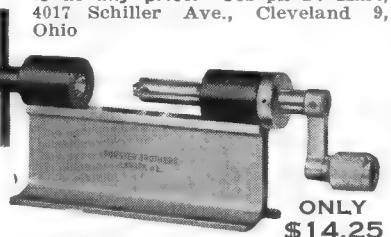
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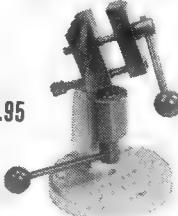
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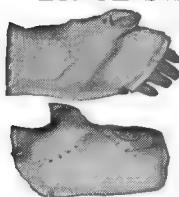
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A little matter of not having a gun that is good enough is one which we all should think about and especially a fellow who is new to the game. Such a new shooter who perhaps has made up or acquired his first benchrest gun is apt to go into a number of matches, and I've seen it happen for several seasons where a shooter with much enthusiasm for the game has come down low on the list because his gun just wasn't doing its part, and become discouraged. He possibly thinks that the other fellows on the line have just a little more ability than he, and such is truly often the case, but many times the gun is just not doing as well as it should.

I speak from experience on this subject because for several years I've felt that one of my guns wasn't doing its part. It would perform fairly well, and then open up just enough to keep me out of the running. I checked and re-checked the bedding many times, changed scope, changed brass, bullet sizes and loads and still didn't get the performance I thought I should. The action was a solid custom made type and the stock was of rugged design with good workmanship and carefully opposing grains in the wood laminations. The trigger was a single stage carefully adjusted and the bottom plate was as rugged as would ever be needed. Allen screws were used and experiments were conducted to vary the pressures. I reluctantly convinced myself that the barrel was at fault although I knew it had not been shot enough to be worn. The results were amazing, and every group that the new barrel has shot has convinced me that I have found the source of the trouble. The matches which I had won with it before were apparently cases where I had misjudged wind and mirage badly enough to make myself a small group and when I was judging conditions accurately or at a period when things were really ideal, I was getting larger groups than I should have.

There is nothing quite like shooting under match conditions to improve one's ability; however, there is nothing like shooting at home when the conditions are ideal to test out just how well a gun will perform. It has been my experience that a gun which has shot well will decrease in accuracy very slowly. If it suddenly shoots poorly, some odd condition has arisen which needs correction and is probably easily detectable. It is the reverse case as in my experience above that creates the problem but it also offers a challenge which most of us in this game accept, and with enough stick-toitiveness, will lick.

Cordially,

C. St. L. Schlechter

MOTOR POWERED LOADING PRESS

The three Martin brothers who operate the MARTIN MANUFACTURING COMPANY at Ludlow, Massachusetts, displayed at the May bench rest match in Plainfield, N. H., an electric motor powered loading press which they plan to market soon. Their purpose was to test reception by experienced handloaders and bullet makers, and to get criticism and suggestions.

This press is not an "automatic" rig, other than an optional one complete operating cycle—up, down and stop. It is a unit of a very rugged loading press with mechanism powered by an electric motor taking over the manual labor of operating the press. The one-cycle automatic feature may be stopped at any point in the cycle and the power operation may be under full control of the operator while adjusting various work set-ups.

The press itself appears rugged and stiff enough to easily handle any case forming or bullet making job in addition to normal loading operations. Any standard $\frac{7}{8}$ X 14 loading dies may be used. There was no provision for primer seating on the press displayed; the designers having followed the advice of handloaders that this operation would better be done in a hand tool.

The electric motor is coupled to the operating mechanism through a friction clutch. Two long wearing fiber driving discs control the direction of rotation of the driven disc (which may be seen in the illustration) which rotates on the heavy threaded rod which powers the up and down movement of the press.

While appearing rather heavy, the complete unit is quite compact. There was no electric power available at this range so the press operation under power could not be demonstrated. The makers stated that the press could be operated on any reasonably sturdy household table without fastening down in any manner. Since all the forces of operation are exerted within the unit, that statement seemed quite reasonable. The makers stressed this feature and the compactness of the unit as a convenience to handloaders who live in apartments of limited space.

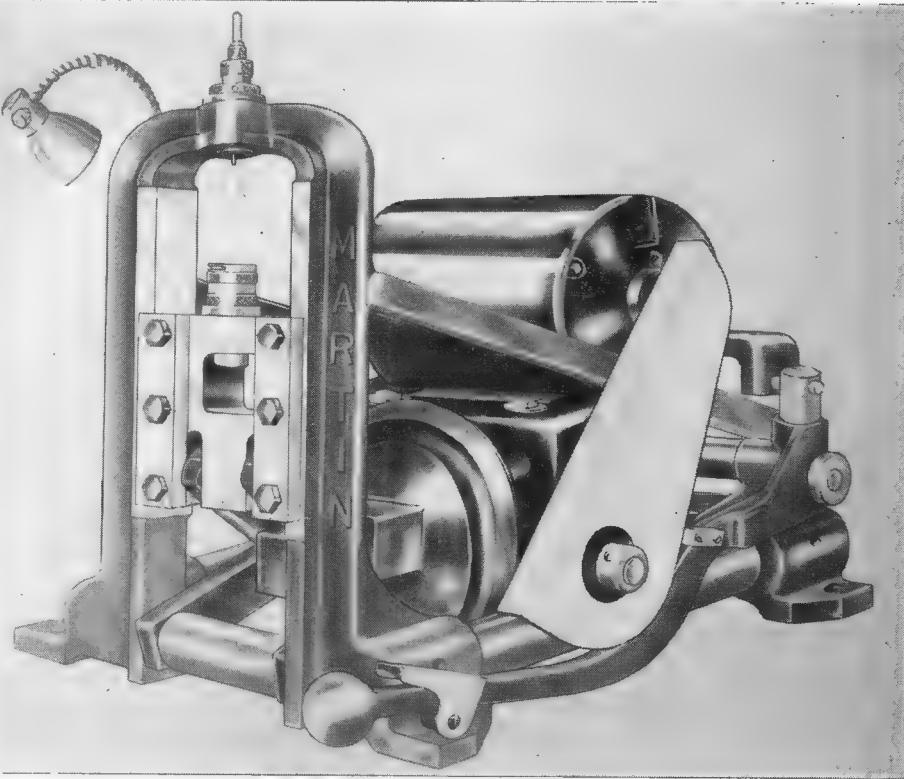
The structural design of this press appears to be sound and practical; the Martins having been guided by the advice of experienced handloaders in their locality in designing it. The workmanship on the presses displayed was excellent and high quality material of adequate size and strength for long wear was used throughout.

The Martins also displayed a unit with a very rugged appearing turret-head press of the same excellent workmanship

Stool Shootin Stuff

(Continued from Page Thirteen)

He was shooting his own bullets and a newly acquired gun, showing clearly that his few other attempts at competition in the benchrest matches had paid him dividends. He undoubtedly was making good bullets before but just didn't have gun enough to do the job until he got this new one. He did, however, have that important element that is needed in the game to come out on top—he looked and listened, practiced and persevered, and came out higher on the winning list than even he had hoped for.



A new electric powered loading press.

and quality material. The makers did not feel that this model would be in very wide demand, though it might be convenient and desirable for those who do a lot of work with several calibers, since set-ups could be made and kept available for two or three of the calibers most frequently used for.

We do not know when these presses will be available for delivery to purchasers. More complete information can probably be obtained by writing to the MARTIN MANUFACTURING CO., INC., Ludlow, Massachusetts.

PHT

THE INFORMATION BENCH

Question: I have been reloading for a Rem. model 722 in .222 cal. Have been using all 50 grain Sierra bullets, 4198 powder and Rem. 6½ primers. Cases used included Remington, Western and Norma. Have loaded 18.5, 19.0, 19.5 and 20.0 grains of 4198. Some of the cases were new and some fired 4 or 5 times. All of the various loads impact at approximately the same elevation on the target at 100 yards, although I find in my rifle that I get the smallest groups from Rem. and Western cases with 19.5 grs. 4198 and with Norma cases, 19.0 grs. 4198. I am new at this most enjoyable sport and the .222 worked out beautifully from the start.

Now then, I have also been reloading for a Model 99-F Savage .300 and this one has been the sore spot. I have been using two loads in this rifle, after learning that pressure was too high with 40 and 41 grains of 3031 powder with 150 grain bullets.

The two loads I am using are: No. 1, 39.5 grains 3031, Rem. cases, Rem. 9½ primers.

No. 2, 36.0 grains HiVel, the other components the same as load No. 1.

When using load No. 1 in NEW cases I get 5-shot groups at 100 yards of 2 to 3 inches, resting but not bench rest. I also get the same point of impact and group size using factory ammo.

When using load No. 2 the groups are 5 to 6 inches low and it keeps me

busy to shoot groups of 5 to 6 inches, and every 3 or 4 shots I get a flier that is 3 or 4 inches below the already low group. The sight is a K-3 Weaver. It therefore appears that No. 1 is the best for my rifle.

Now then, here is my question. If I fire load No. 1 in cases that have been fired once or twice in my rifle, and full length resized, the impact point at 100 yds. is from 4 to 6 inches low and about 3 to 4 inches to the right, and the group opens up to 6 to 8 inches over factory ammo or NEW handloaded cases. What could possibly cause this difference between new and resized cases?

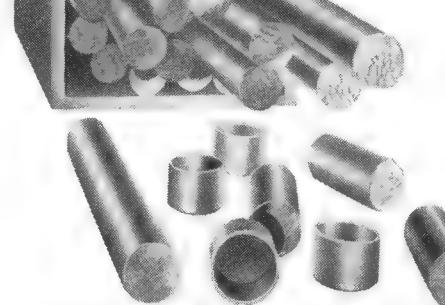
For your further information, I find it necessary to trim the cases after each firing in this rifle. I use R. C. B. S. dies and I returned the standard dies to the manufacturer for lapping out, since I felt the standard dies were working the brass too much for my gun. I understand that new factory brass measure .465" to .466" at the base. My fired cases before resizing measure .472" at the base. Since I am not bringing the cases back by resizing to factory size, could this account for the difference? Robert W. Delp, Lititz, Pa.

Answer: I would be unable to give you a good answer without close examination of your rifle and cases. However, it is evident from your description that your cases which have been fired and resized have some kind of interference in the chamber which is detrimental to accuracy. This could be thickening of the neck wall, deformation of the neck wall in resizing or deformation of the case itself causing interference. It is also possible that you have inadequate ignition due to excessive shortening of the case and resultant inability of the pin to reach the primer. There is also the possibility that work hardening of the brass has given a firmer grip on the bullet and changed the burning characteristics of the powder (changed shape of pressure-time curve).

Your load of HiVel is much lighter than your load of 3031. M. H. Walker

(Continued on Page Sixteen)

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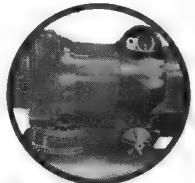


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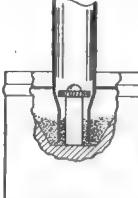
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The Information Bench

(Continued from Page Fifteen)

Question: A friend of mine and subscriber to "Precision Shooting" suggested that I write you concerning difficulty I am experiencing with cases. The rifle I am using is a SAKO Forester, caliber 243. I use NORMA cases, 44 grains 4350 powder, 87 grain Hornady bullets. The bullets are seated .050" from the lands.

When using the above load in new NORMA cases I can shoot a $\frac{1}{2}$ " group at 100 yards, scope adjusted so that bullet impact is $1\frac{1}{2}$ " above point of aim. When I use cases that have been fired two or three times with the same load, the group will spread to approximately 1" and the point of impact drops from $\frac{3}{4}$ " to 1". This condition remains the same regardless of whether I full length size the cases or neck size them.

In a recent test I fired three re-sized cases at 100 yards. The group measured 1" and the impact was $\frac{1}{2}$ " above the point of aim. Immediately after I fired three new cases, all the same load, the group measured $\frac{1}{2}$ " and impact was $1\frac{1}{2}$ " above point of aim.

Any comment you care to forward me regarding this matter will be greatly appreciated. F. J. Mulligan, Mechanicsburg, Pa.

Answer: It sounds as though your brass is too close to the size of the chamber at the neck. Firing the case has thickened the brass slightly and caused the interference or your reloading dies have made the case neck crooked.

Try some Remington or Winchester cases. M. H. Walker

Question: I would like to know if the Remington 725 can be disassembled sufficiently far in the field so that it can be used on long hunting trips "back yonder." I am particularly wondering if the trigger assembly can be readily dried and oiled if it should get wet. Of course, a rifle shouldn't be allowed to get wet, but they do. Also, is the bolt as hard to disassemble as the 721 bolt? Naturally, in these respects, I am mentally comparing the 725 to the Winchester 70.

The 725 seems to have so many points of superiority that I would like to choose one. However, for this one particular use (use in the wilderness), ease of disassembly seems a necessity. Joseph F. Reuwer, Jr., Durham, N. H.

Answer: The basic design of the M/725 is exactly the same as the M/721.

However, the disassembly of the M/721 for cleaning can certainly be accomplished without tools as easily as any rifle.

The firing pin assembly can be removed from the bolt simply by catching the notch in the cocking piece on a corner, such as a boot heel, bench corner or whatever, and retracting the firing pin enough to slip a coin between the cocking piece and bolt plug. The firing pin may then be unscrewed. Assemble in the reverse order. The firing pin need not be retracted in assembling. It's much easier done than said.

The best method of cleaning the trigger in the field if the rifle gets dunked is to remove the stock and bolt and dunk the rear end of receiver in a cleaning solution such as Hoppe's and stand to drain. This will displace any water in the trigger mechanism. Lacking facilities for this procedure, place the action of the rifle close enough to heat to get the receiver etc. hot to the touch. Later dope a few drops of Hoppe's or other cleaning compounds into the trigger.

I personally have done a lot of hunt-

ing with M/721s and M/722s as well as Mausers, M/70s and Springfields. There is very little choice in ease of maintenance. Alaska is the worst on rifles of any territory I have hunted. No difficulty was experienced with M/721s there. M. H. Walker

WE ARE LOOSING "MIKE" WALKER'S SERVICES. M. H. "Mike" Walker has requested that he be relieved of his work on THE INFORMATION BENCH, effective with this issue. His other work and commitments make it impossible for him to devote the time to answering the questions regarding rifles and rifle shooting as he feels it should be done.

We are extremely sorry to have to lose the services of such a well qualified person as Mike Walker but we have to accept the fact that he knows better than anyone else how far his time can be spread. We do very greatly appreciate the very fine job that Mike has done with THE INFORMATION BENCH service, and we think that many of your readers do, too.

We shall try to find some qualified person to answer THE INFORMATION BENCH rifle questions. For the time being, questions may be sent to Precision Shooting, Lyndonville, Vermont, and we will try to find the answers, or find some one who does know the answer.

New Sisk .22 Bullets

(Continued from Page Nine)

ments. The price, I thought, would be the loss of precious velocity to gain a few grains of bullet weight. I was wrong, at least to some extent. The 45 grain **Revolver** Bullet, backed with 8.7 grains 2400, ignited with CCI primers, works beautifully. Velocity is considerably higher than the factory .22 WMR, and tissue destruction is far, far greater. It packs a real decent punch for larger varmints in the bobcat and coyote class, giving excellent expansion with penetration. My tests are not complete with the 50 grain, but indications are it will be very good. I'm not going to recommend it for deer hunting, but some lads will probably use it, and make clean kills with well placed hits.

The new bullets are for those who want more weight, and they give excellent blowup with mild charges in rifles, an advantage where a mild report is desired, and for moderate range. For my handgunning on varmints I'll stay with the original 37 grain, that performs so well with 8 to 10.5 grains 2400 in the Kay-Chuk.

BULLET SWAGING DOPE

By Kent Bellah

R. W. Kampen, 557 Pearl Ave., Rockford, Ill., recently made a run of about 200,000 half-jackets for swaging .38 and .357 revolver bullets. They are good jackets, approximately the same dimensions as those supplied by Lakeville Arms, Lakeville, Connecticut, and Bahler Die Shop, 1500 Thompson Road, Coos Bay, Oregon. Mr. Kampen had about 600 pounds of suitable gilding metal on hand, and while this lasts the jackets will sell for \$10 per 1,000. He also has some two million rifle bullet jackets in stock that he intends to sell at reduced prices while they last.

Kampen jackets, like the other two makes mentioned, work well in swaging Harvey Jugular type 127 grain bullets, using cores cast in Harvey core moulds. This is the most economical way to make this type of bullet, and cast cores are nearly equal to cut wire slugs, if your

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4. First and Second places, 300 meters, Du Bois, Pa., 1957, Clair Taylor and Don Rob.
5. National Match Course, Du Bois, Pa., 1957, 1st, 3rd, 6th, 7th places.
6. National Match 10-shot 100 yd. aggregate, Augusta, O. Al Creighton, .3105".
7. National Bench Rest Championship, Johnstown, New York, 1955, Sam Clark, Jr.
8. 10 Shot 200 yard WORLD RECORD, Du Bois, Pa., 1954, Sam Clark, Jr. Score, or Group, .5276"
9. 10 Shot 200 yard WORLD RECORD, Du Bois, Pa., 1956, H. L. Culver (Present record) Group size .4016"
10. 1000 Yard, Famous Wimbledon match, any sight, 1955, Camp Perry, O. Frank Conway.
11. 1000 Yard, Famous Wimbledon match, any sight, 1956, Camp Perry, O. Frank Conway.*
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The cable is cut into about 3 foot lengths and the sheath is stripped with a butcher's cleaver. The point of the cleaver is driven down the sheath with a hammer, and the lead peeled off. This particular sheathing is high quality lead, more pure than some commercial pig lead. It was put in service in 1908, and discarded a few years ago.

Strips weigh about 3 pounds per foot, and are just right to melt down in a SAECO "Utility" furnace, two strips at a time. When the furnace gets nearly full the metal is poured into one pound SAECO pig moulds, leaving a few pounds of liquid metal in the pot to help start the next batch. This keeps one man busy pouring pigs, dumping pigs, skimming surface dross, and the other odds and ends required to make a stock pile of lead ingots. I can pour about 50 pounds per hour, good for about 3,000 bullets.

Cores are cast in Harvey 2-cavity Jugular moulds, using a SAECO Thermostat Furnace, with the temperature set at about 750° F. Cores drop more freely than bullets, and I can throw about 750 per hour. This is a little slower than casting with the H & G 4-hole moulds, using two moulds at a time, but the lighter blocks are less tiresome for several hours work. Cores are more nearly perfect than cast bullets, and min-

(Continued on Page Nineteen)

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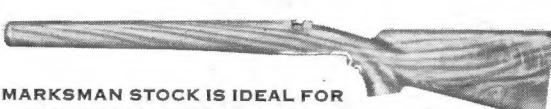
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Some Rifle Experiences

(Continued from Page Five)

the blunt round nose 154 gr. Hornady. This and all lighter bullets worked excellent. The Norma Match was about 3" at 100 yards while the 175 Hornady was better but showed signs of tumbling at 200 yards. My 7x57 nine inch twist was very light hunting rifle twenty-two inch barrel. It accounted for one bull elk, two large mule deer bucks, one white tail buck, one large Mexican big horn ram, two golden eagles, several coyotes and hundreds of jack rabbits. The elk and practically all the others were one shot kills. I think this is one of our finest game cartridges, but to continue on this subject. If one was going to use the excellent 175 gr. or even the long pointed 156 and 160 gr. I would not recommend anything slower than ten inch twist and preferably nine inch.

About the reborced barrels. My little nine inch twist barrel finally gave up with quite a few thousand rounds through it. It was by Gartman, I had it reborced by Ward Koozer of Douglas, Arizona to 30-06 and $\frac{3}{4}$ inch taken off muzzle in tune up job. The last ten shots over Weatherby's bench in his 100 yard test tunnel, it kept all ten shots from a cold to hot barrel in $\frac{1}{8}$ inch center to center. Load was 50 gr. 4064, Sierra 110 gr. hollow point and Federal 115 primer. A little under 3000 muzzle V. It seems to handle the 125 gr. Sierra and 180 Hornady equally well. I know some will be skeptical of these statements but I can back any with proof. Joe A. Deckert, my shooting partner and I had two standard 220 Swift stainless barrels reborced to 6 mm and chambered for a full length 30-06 case. Joe, by the way was the one that even the Russians wouldn't believe until he won a place on the American International team in 1958, and went to Moscow. He won his objective, the World Champion in the double running deer event. Joe got his basic practice for this by shooting our running jack rabbits and occasional coyotes. Joe's barrel was made with eleven inch twist and his load was 60 gr. 4350 with Sierra 75 gr. H. P. bullet. It chronographed 4000 M. V. His barrel groove dia. was .2435". I checked his rifle over a car hood at the end of a hunt at a long 100

yard paced range. 5 shots went into $\frac{3}{4}$ inch. Joe later had my son, P. J., check it in Weatherby's 100 yard windless tunnel and he got a 5 shot group of 5/16". My barrel was a ten inch twist and a tight .243" groove dia. I went the wrong way just to see what it would do by shooting 60 gr. 4350 and Sierra 60 gr. bullet. In tight bore it gave me maximum pressure and maximum case capacity at same time but I had slightly over 4400 M. V. Over 500 yards this is the flattest rifle I ever fired. In spite of too much twist for these bullets (as some will say) it is very accurate. I previously had an Apex 6 mm barrel 28 inches long in this caliber. With this hot load I fired 550 bullets through it before getting a keyhole. I cut 3 inches off breech and started over but with 85 gr. Sierra and slightly milder load. After 600 rounds it still looked and shot very good but that is the barrel I had turned to sporter weight and reborced to 6.5 with nine inch twist. Have just fired 20 shots through it without too much success. The first 10 shots were sighters and the last ten went into 2" at 100 yards. The rifle is not properly bedded or tuned up. This is an experiment as I had Koozer give me a very small bore diameter of .254" while groove diameter is .2645. He doubted I would get good accuracy with lands a full .005" high compared to the usual $3\frac{1}{2}$ to 4 thousands inch. I believe I will have another thousand or so barrel life. I once had a fine Chrome-Moly 220 target weight barrel which wore out in due course. I had a P. O. Ackley reborced and chamber this to his 25-06 improved. This was one of those rare barrels that was very accurate, and would put 87, 100 and 117 gr. Sierra bullets all in the same impact area and at all normal hunting ranges.

One other item that may interest a few readers. I just finished talking to M. Sgt. Jack Maskew, one of the A M U Armorers of Ft. Benning, Ga. He verified a statement I recently made about the M 1 Rifle. He said they tune rifle then test it from cold to hot with three ten shot groups at 300 yards with current F A Match ammunition. If any of the shots exceed an over all group of 5" rifle is rejected. He stated many keep all shots inside of 3". This is no 3 or 5 shot group and to see that odd, unbalanced barrel out of stock you wonder how it can be done. It is not hand loaded ammo either.

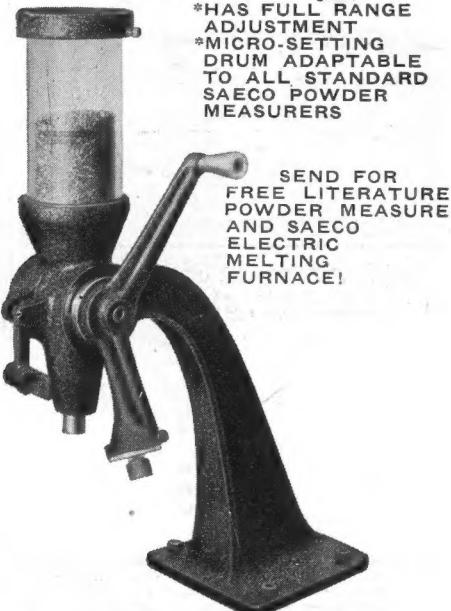
Before closing I would like to comment on Col. Townsend Whelen's method of bedding. I like the close tight chisel job on a fine sporter, relieved under barrel but touching with light pressure at forend. I also have an old heavy target Springfield with a few thousand through barrel with this bedding. The stock is well seasoned and does not seem to change in wet or dry weather. For a tough match I still dig this rifle out. At the Ruidosa Annual match this spring it won the 600 yard event with a 14 V-100 in good wind. It has a twelve inch twist and is very good up to 600 but it has never shot a score worth while at 1000 yards. At a Texas match my Winchester 70 with target barrel 10" twist and iron sights fired a 100-15V., at 1000 yards. For down right seriousness at Camp Perry I would use a rifle with action and one inch of barrel glass bedded. Forearm would be so free you pour water in and out so it would never swell enough to touch metal.

A twelve inch twist on a model 70, 300 H. H. bull gun is a new one on me. I always thought mine was a ten inch

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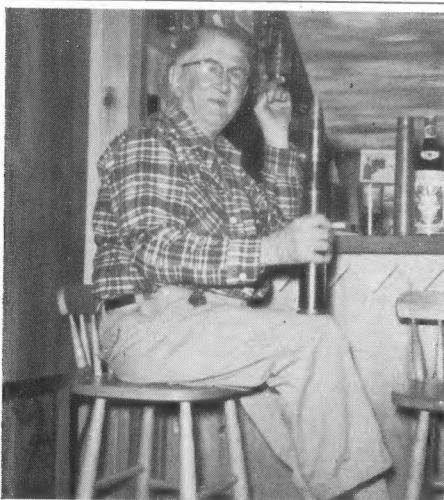
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Harvey Donaldson has the proof to back up statements he makes—but the stories must have gotten BIG in the convivial atmosphere of the party in Tony Studenic's rumpus room (near Johnstown, N. Y.) to force Harvey to display this king-size cartridge. Incidentally, Tony's rumpus room is a rather fabulous place, with its walls covered with armament of the centuries and filled (literally) with music.

twist. Maybe I am wrong.

I could go on and on about barrels, twists, bullets, etc., but maybe I have said too much now. Will add that I would not consider anything other than .30 caliber for Wimbledon shooting because you simply cannot get proper match type bullets unless the one exception is the remarkable 6.5 Norma match in 139 gr.

Sincerely,
Paul Wright

Bullet Fit and the Bernoulli Theorem

(Continued from Page Seven)

shotgun shell had been inserted in the nipple. By means of a small hole drilled in the pipe cap, the primer was indented with a hammer and a nail. The explosion which followed usually got results of some kind. If the obstruction was only loose debris, it came out; if it was brick mortar or hardened concrete, and the buried conduit was not too far below the surface, the place of the obstruction would be indicated by a shattered concrete floor or column. That the burst occurred at the receiving instead of at the sending end was another example of kinetic energy being converted into pressure energy in accordance with the Bernoulli

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Theorem.

Bullet Swaging Dope

(Continued from Page Seventeen) or defects are swaged out when bullets are made.

My shooting friend (and he can really shoot!), Monroe Thomas, casts most of my cores. Monroe can come in after a hard day's work and relax while casting a few thousand cores. This works out dandy, as I'd rather do something else most of the time, although I like to cast when time permits. My fault, if you can call it that, is making a long run, keeping the furnace going until I'm used up. Still, I don't cast in volume like the big custom loaders. Capt. George Buey, for example, made some 500,000 castings in 90 days, using a SAEKO Thermostat Furnace. This was nearly 10,000 pounds of lead!

I tried a sample of 1,000 Kampen jackets, to see how they work with cast cores. They work okay. The only fault I found, a bit of black dust and some small wood shavings were in the container. It does no harm if you make a few bullets and handle each jacket individually. It does slow down production. We like to empty 1,000 jackets into a film box, lubricate a handful at a time with Die Lube on our hands, and transfer to another similar box. (Rifle bullet swagers will say this is a heck of a way to lubricate jackets. It is, for rifle bullets. I'm talking about Jugular type bullets.)

Monroe and I have made enough pills that we work well as a team, which accounts for considerably faster production. He is faster at swaging than I'll ever be. I insert cast cores in lubed jackets and he kicks 'em out at the rate of 1,000 per hour! We timed swaging the 1,006 Kampen jackets at 61 minutes, which included an interruption when a customer had to be waited on. We can swage faster if anyone wants to see it done for money, marbles or bullets.

We used inexpensive equipment. The press was a C-H Super C. Dies were Harvey Lever Ejection, at \$39.75. When I first used these dies, Monroe swaged while I inserted cast cores in the cups. Production was at the rate of 700 per hour, or rather a timed 535 bullets in 45 minutes. Cast cores swage much faster and easier than cut slugs. Practice speeds the operation, of course.

Harvey Canelure Dies were used to crimp jackets on the cores. This absolutely prevents jacket shedding, in the bore or in flight. When I got these dies in 1956, I could run about 500 bullets per hour in the easy-to-feed "C" press. Now I can nearly double that speed, proof that practice improves efficiency.

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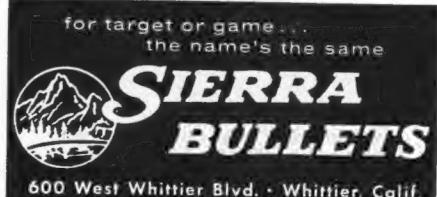
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